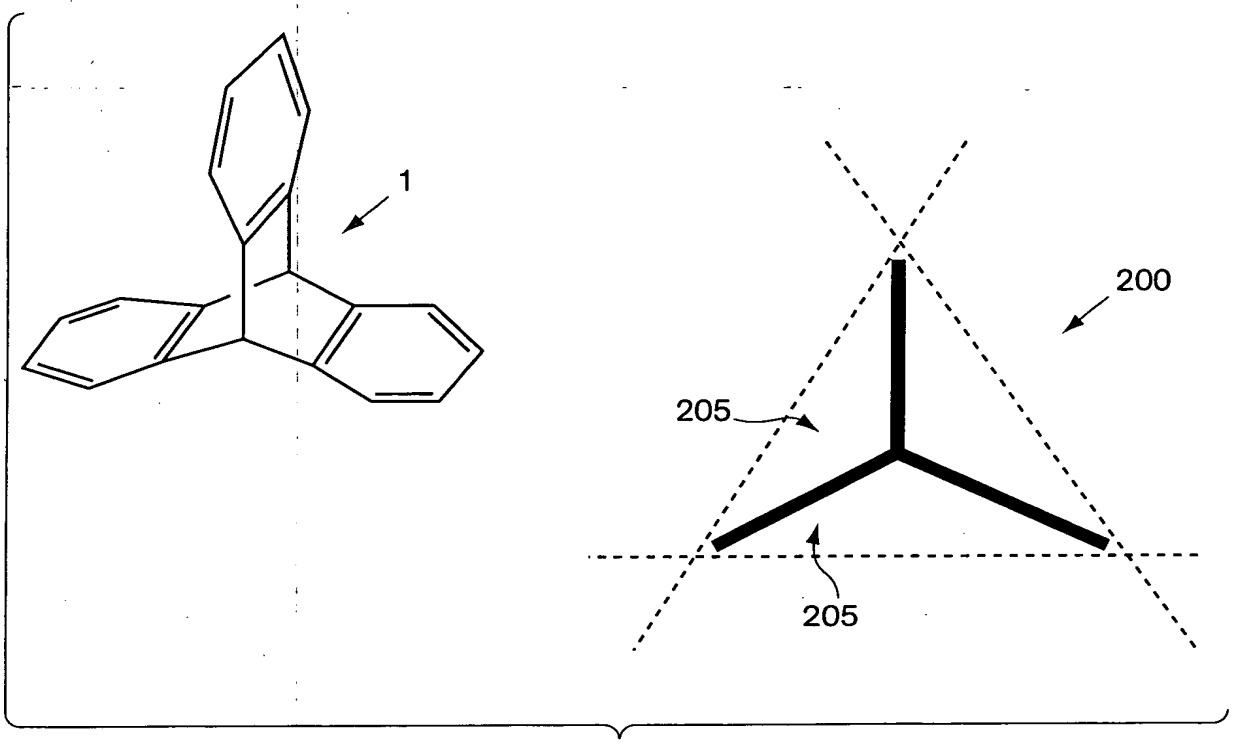


Fig. 1A
(PRIOR ART)

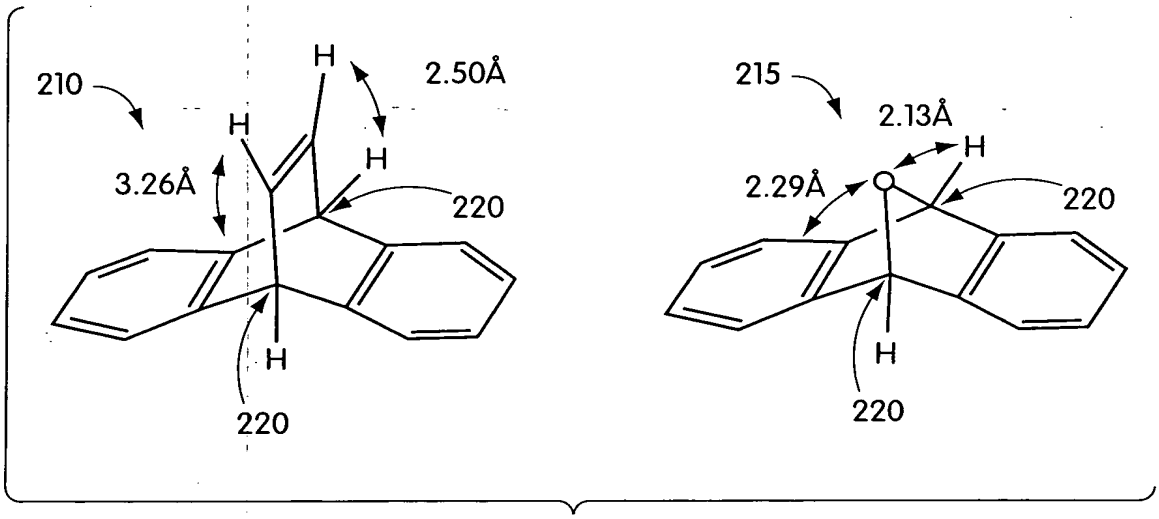


Fig. 1B
(PRIOR ART)

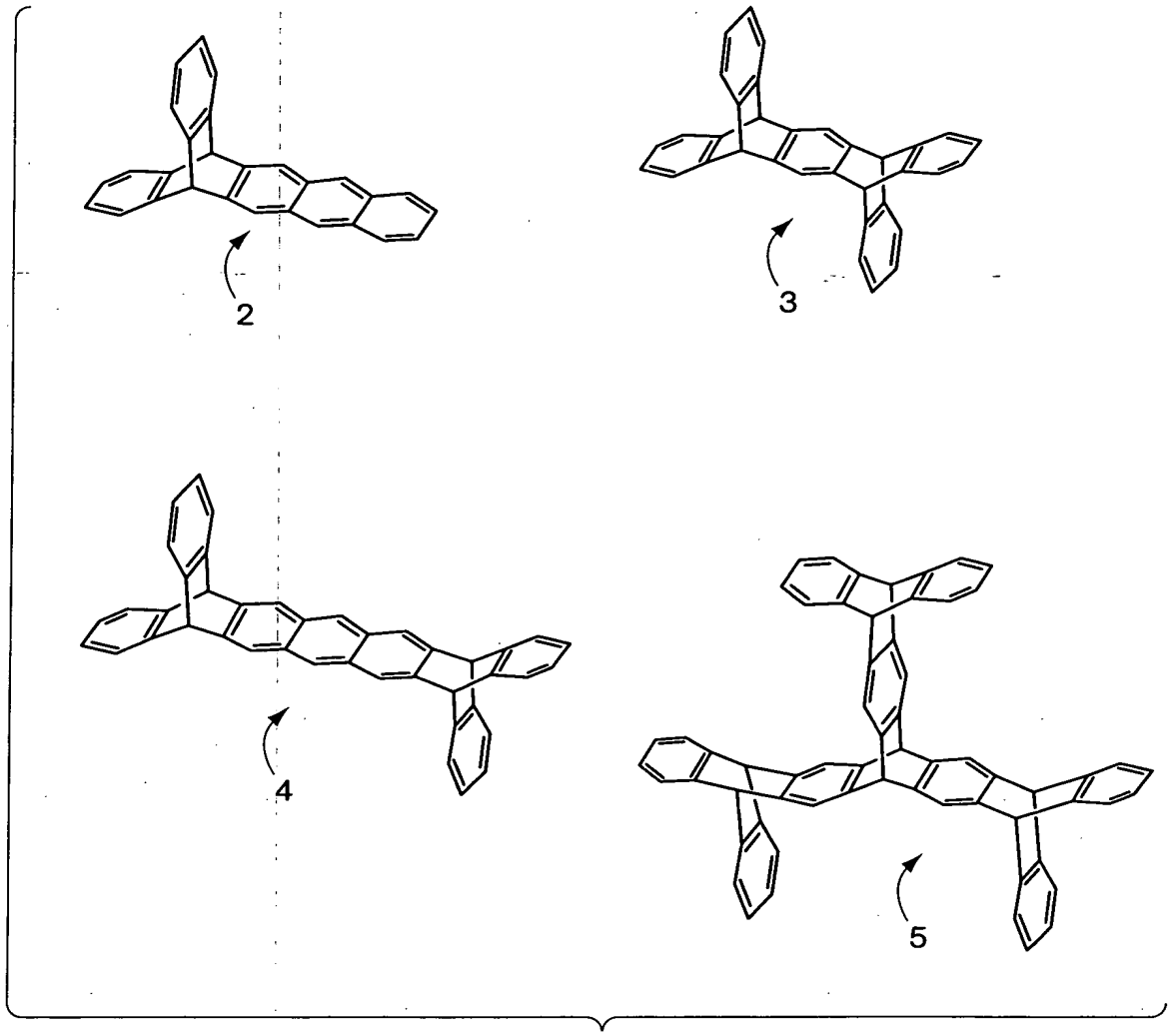


Fig. 1C
(PRIOR ART)

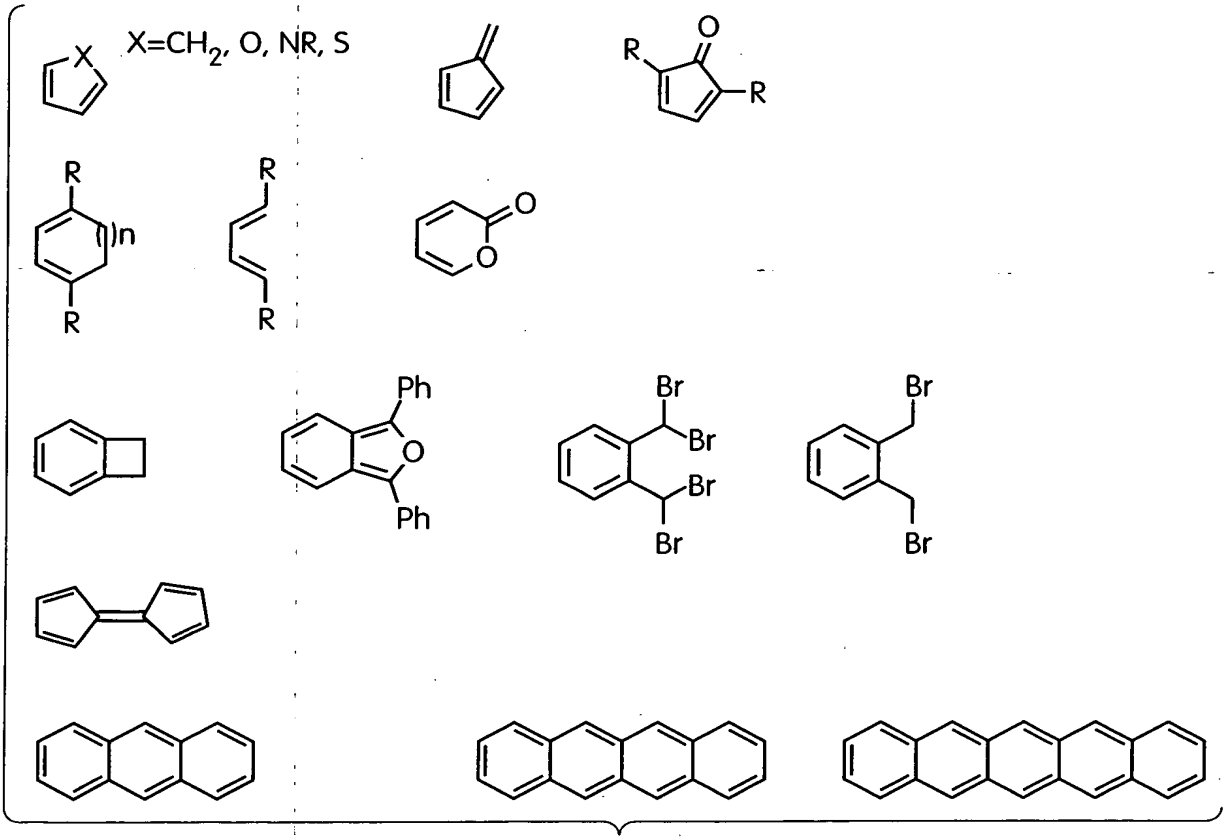


Fig. 1E

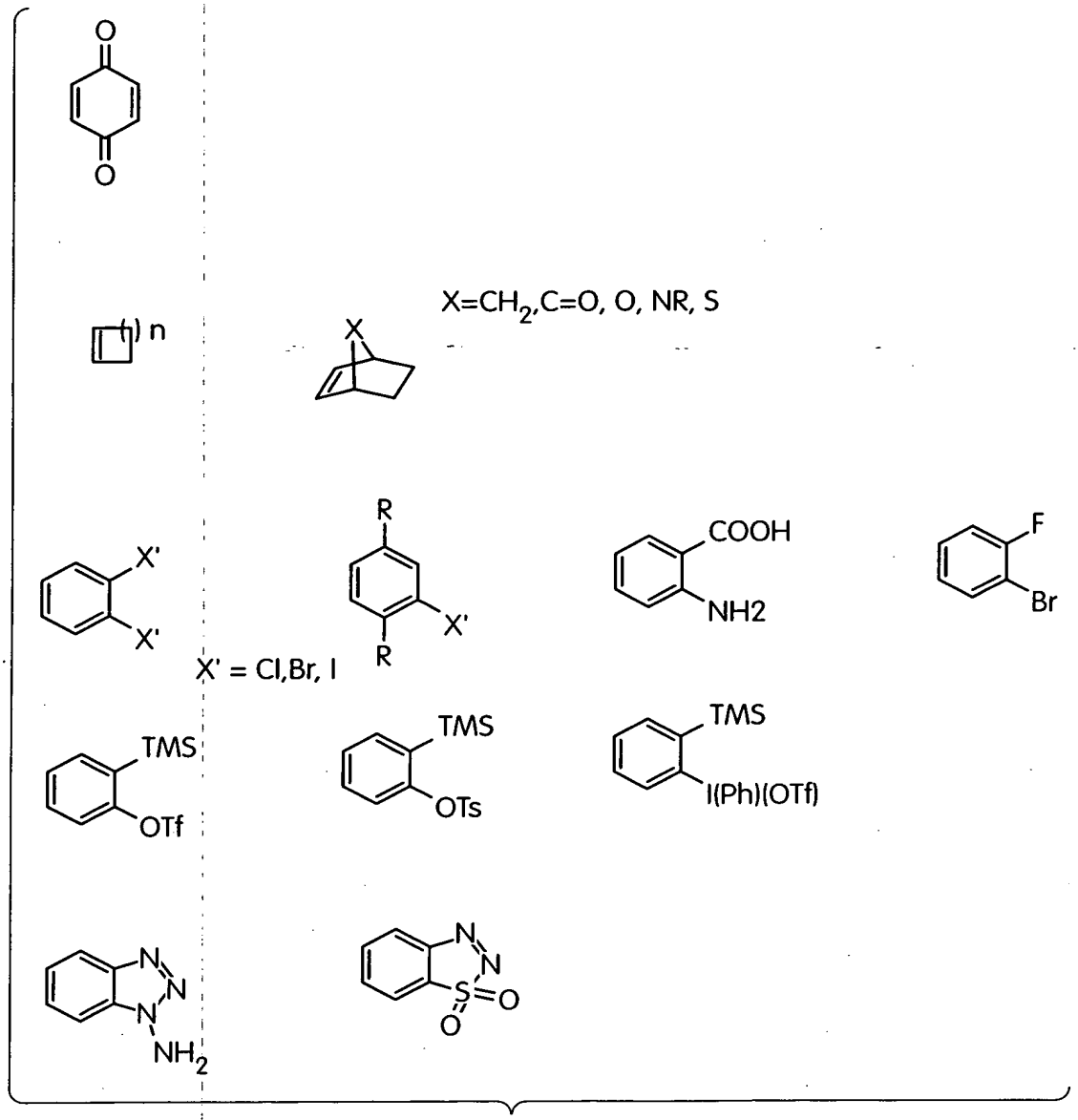

O
O
n
X
X=CH2,C=O, O, NR, S
X'
X'
X' = Cl,Br, I
R
X'
R
COOH
NH2
F
Br
TMS
OTf
TMS
OTs
TMS
I(Ph)(OTf)
N
N
N
NH2
N
N
S
O
O

Fig. 1F

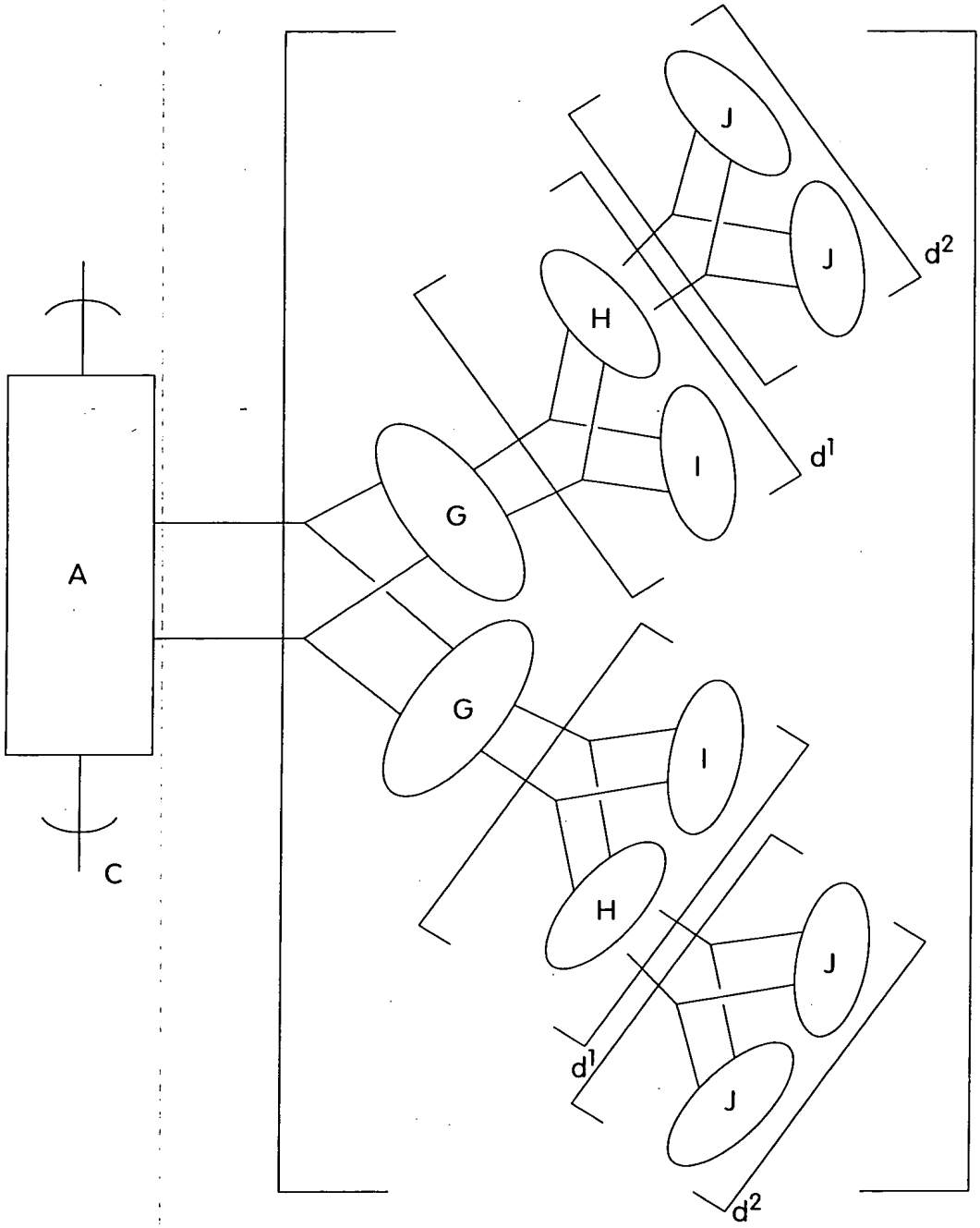


Fig. 1G

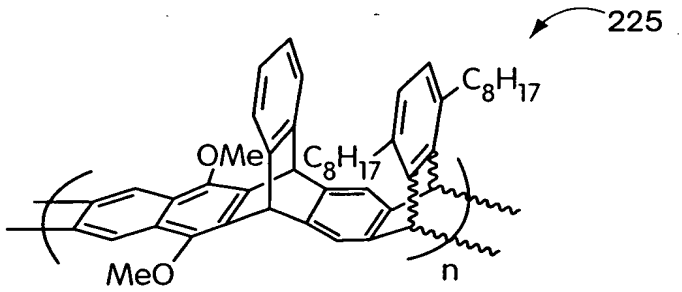


Fig. 1H

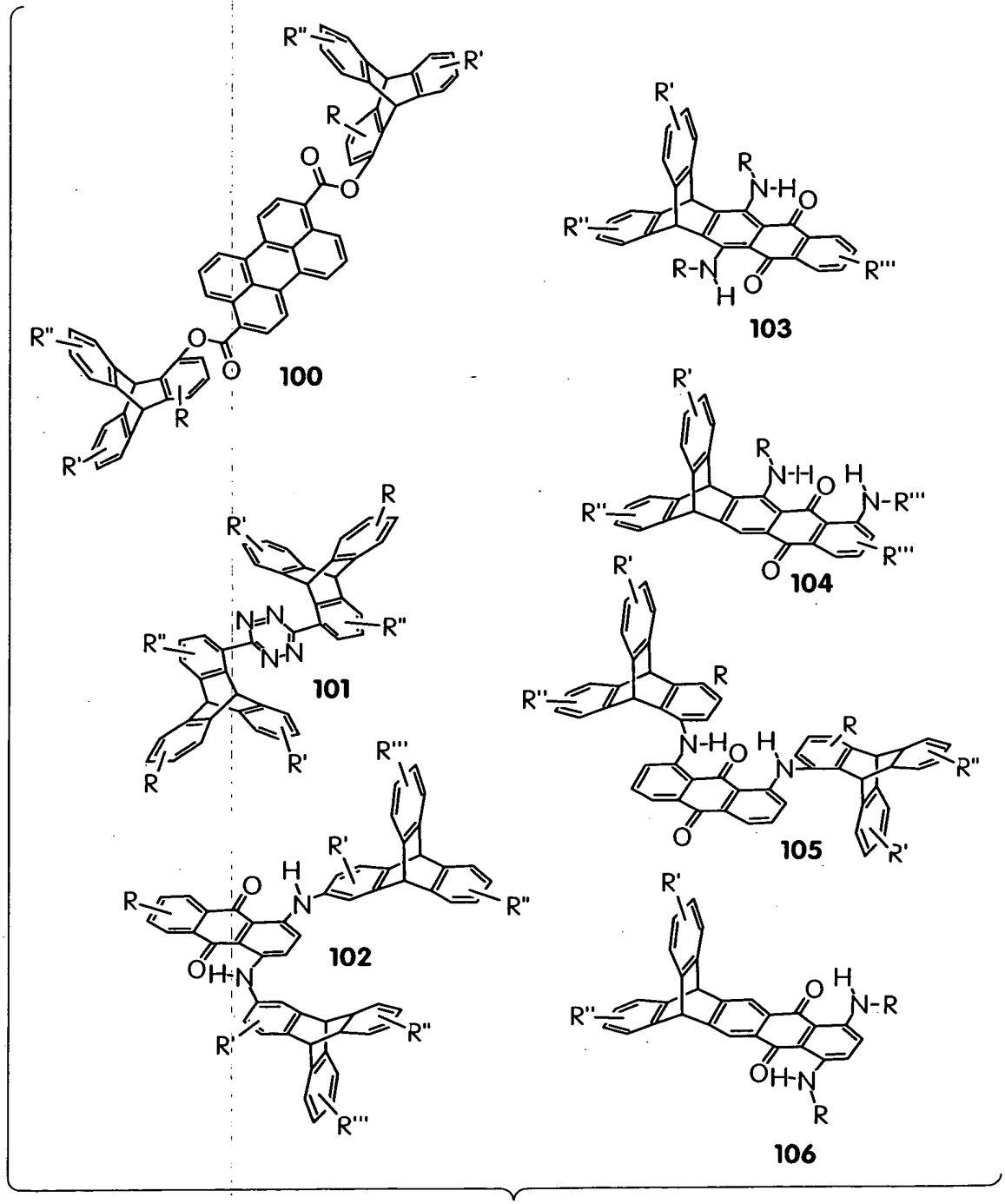


Fig. 1J

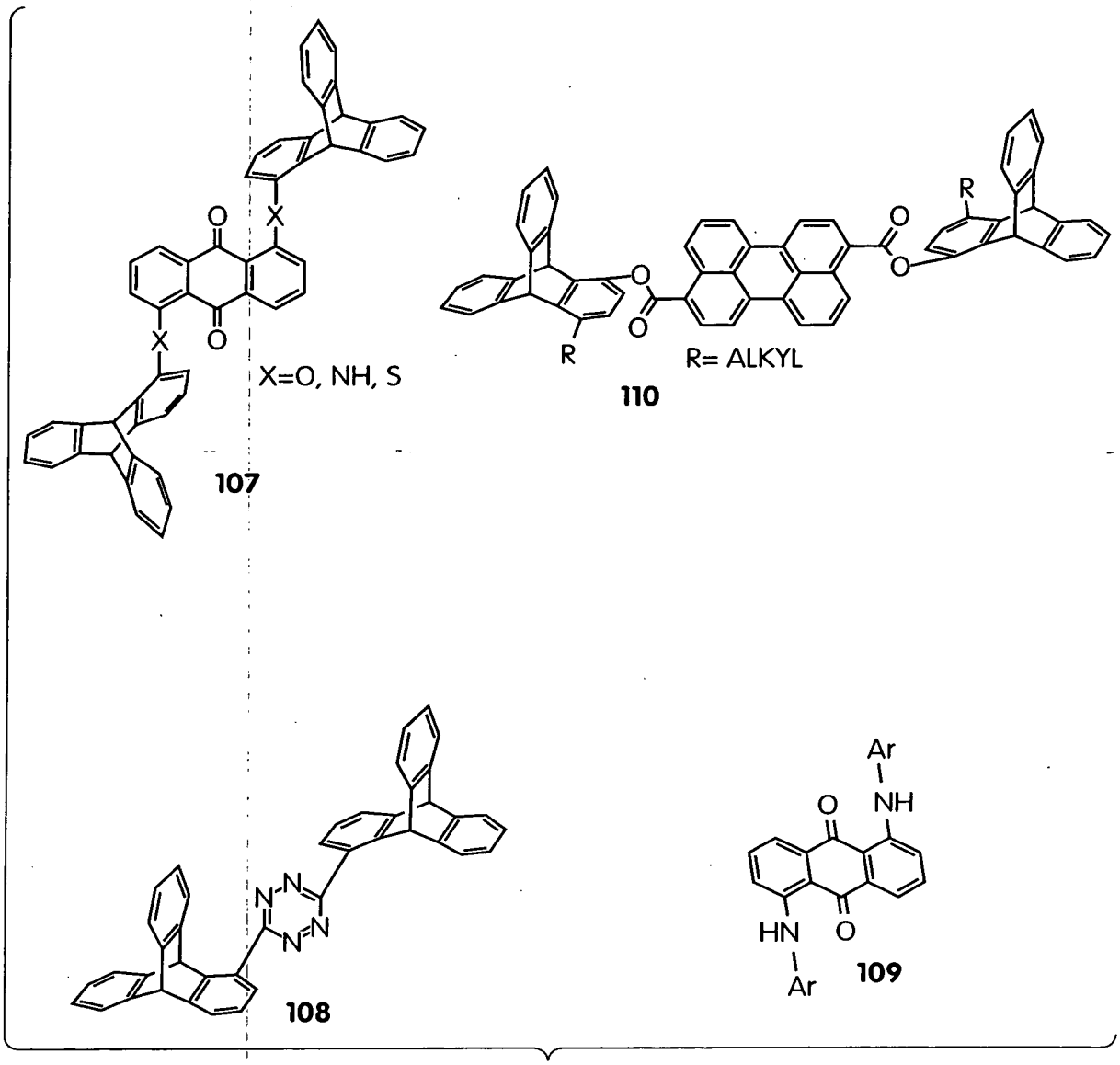
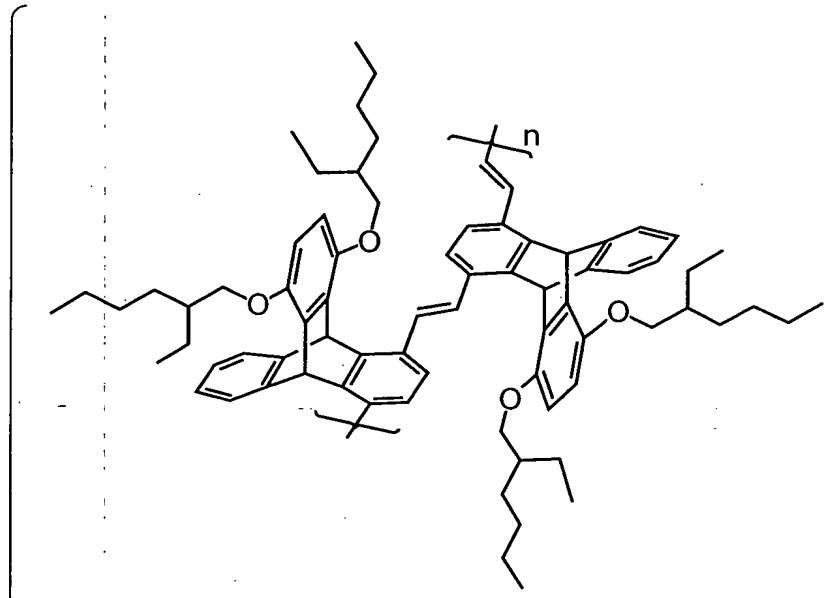
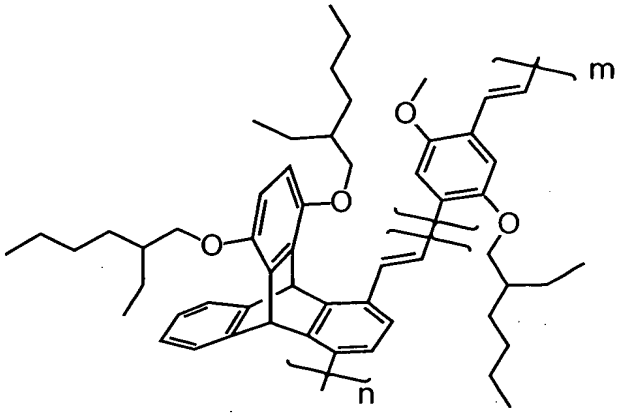


Fig. 1K



111



112

Fig. 1L

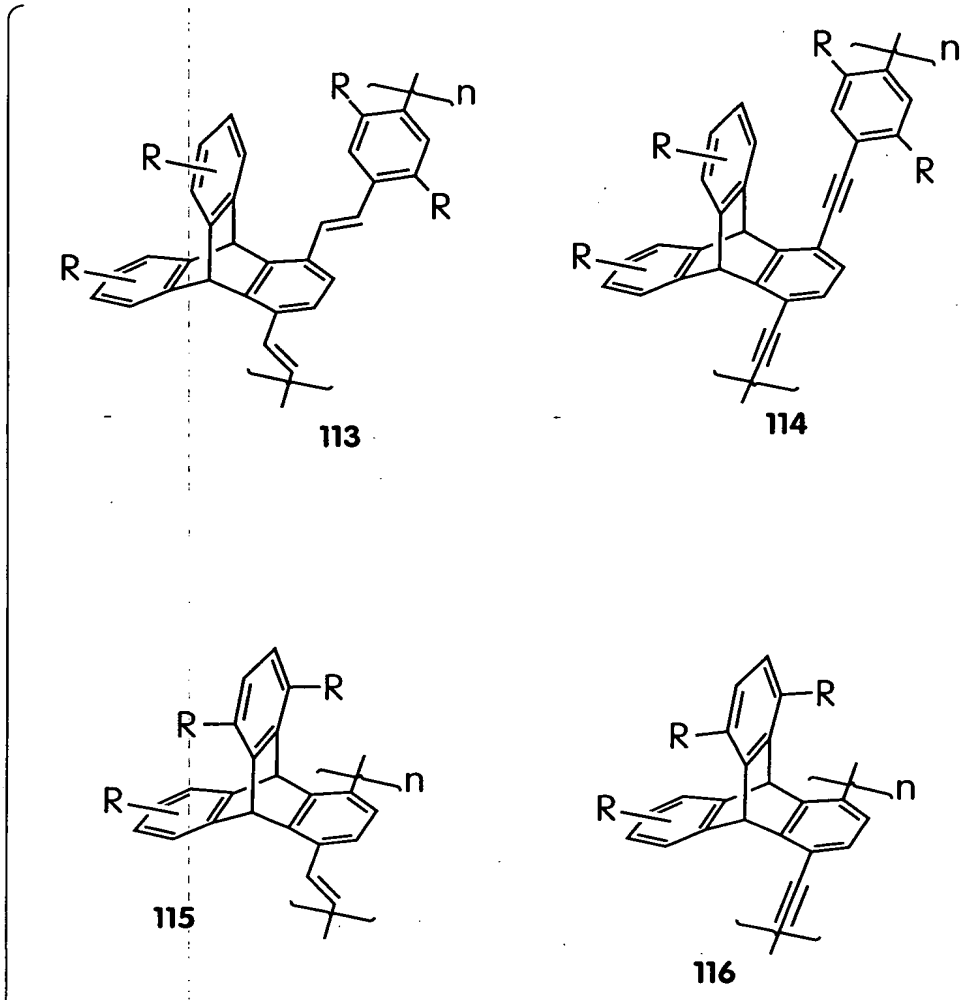


Fig. 1M

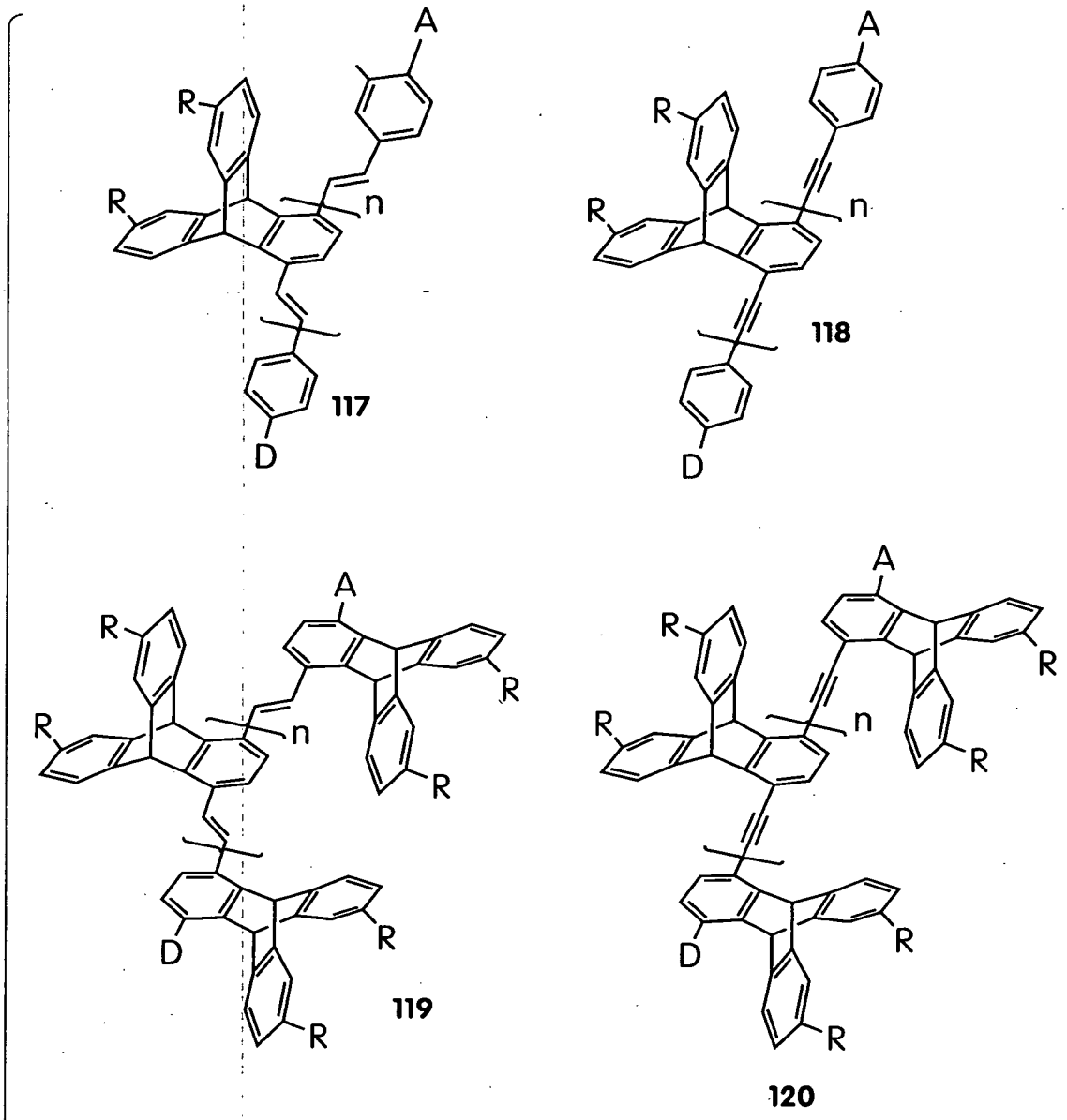

A
R
R
n
D
117
118
119
120
A=CN, C_nF_{2n+1};
D=$N(C_nH_{2n+1})_2$, OC_nH_{2n+1};
R=C_nH_{2n+1}, C_nF_{2n+1}, OC_nH_{2n+1}

Fig. 1N

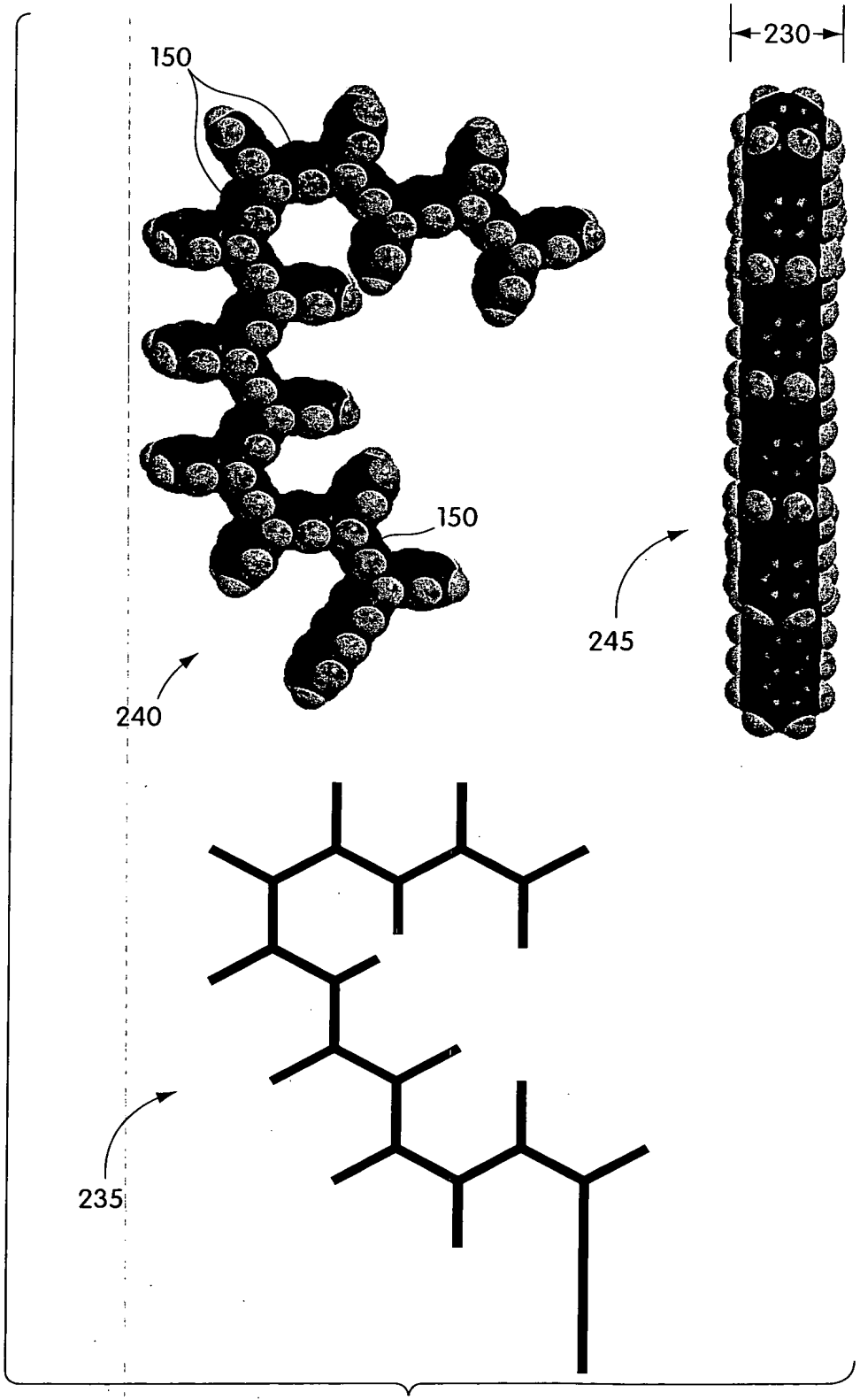


Fig. 2

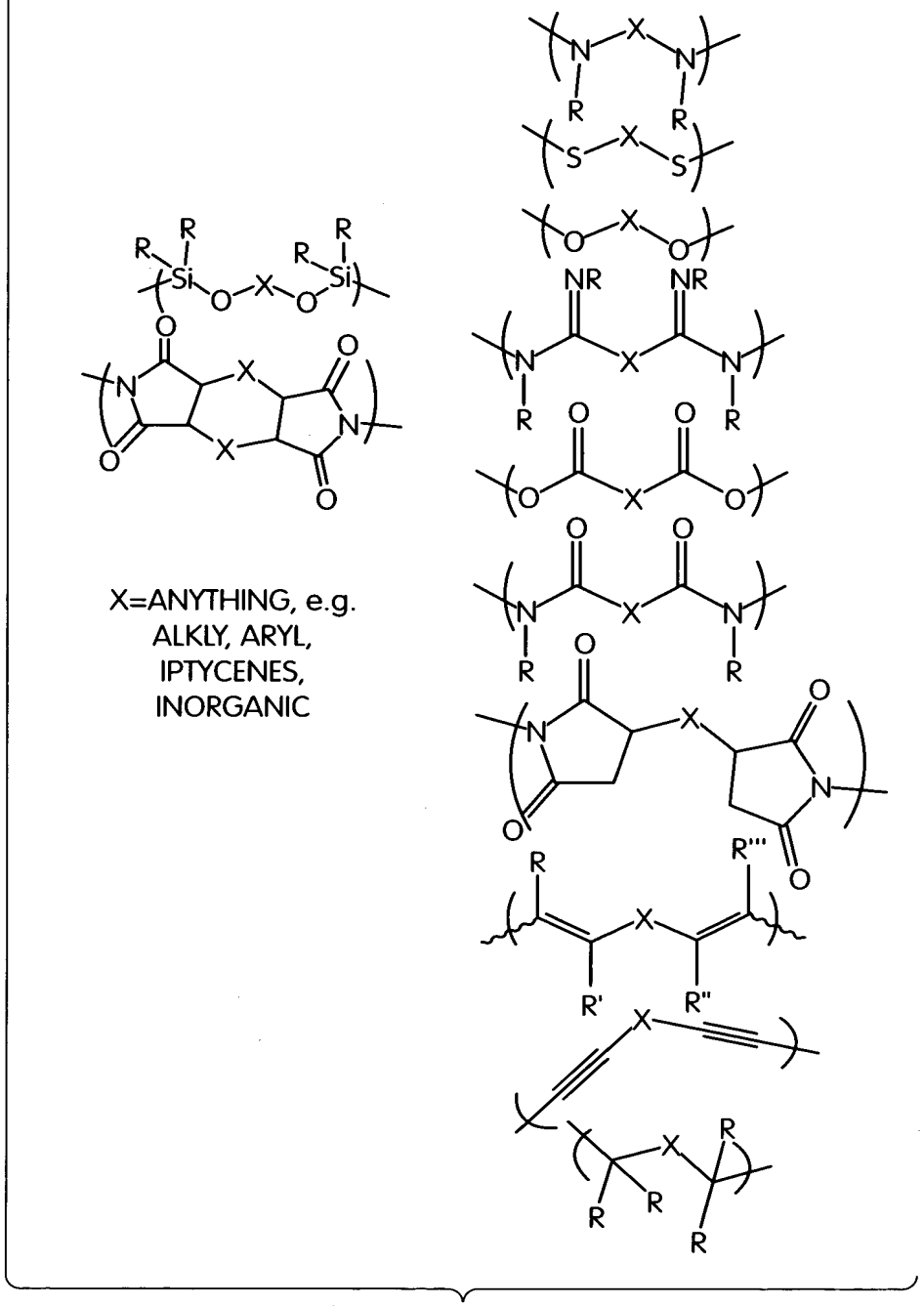


Fig. 2A

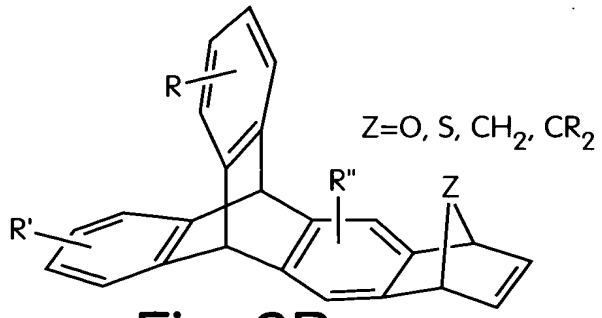


Fig. 2B

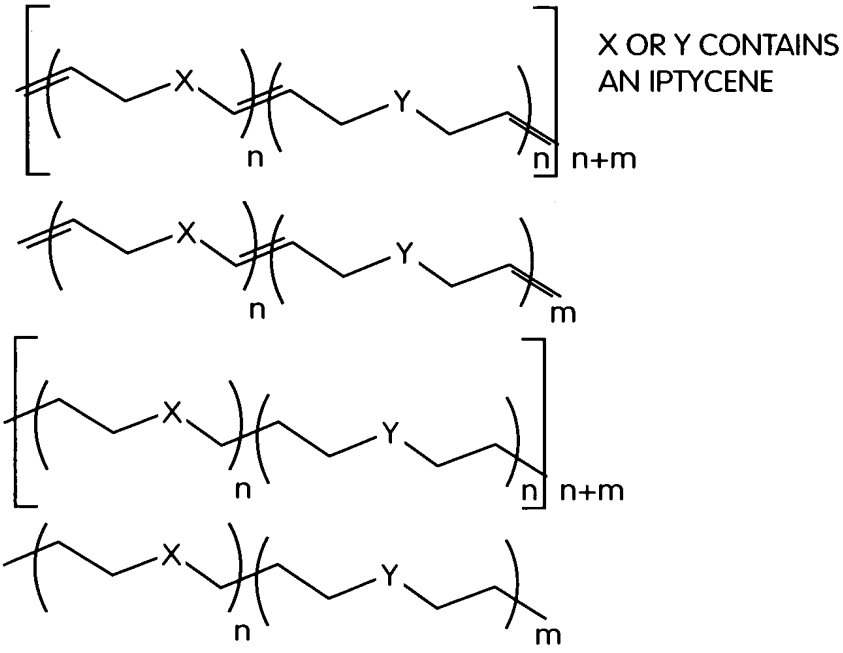
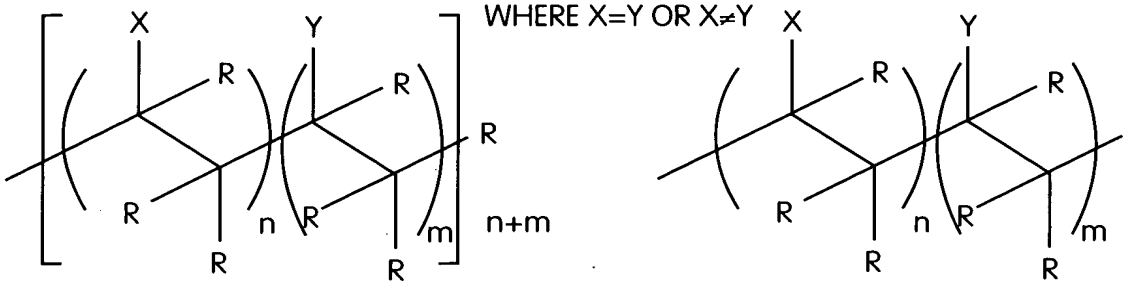


Fig. 2C



IF X=Y, THEN POLYMER MAY BE ATACTIC,
ISOTACTIC OR SYNDIOTACTIC
IF X≠Y, THEN EACH BLOCK MAY BE ATACTIC,
ISOTACTIC OR SYNDIOTACTIC
R = FUNCTIONALIZED IPTYCENE

Fig. 2D

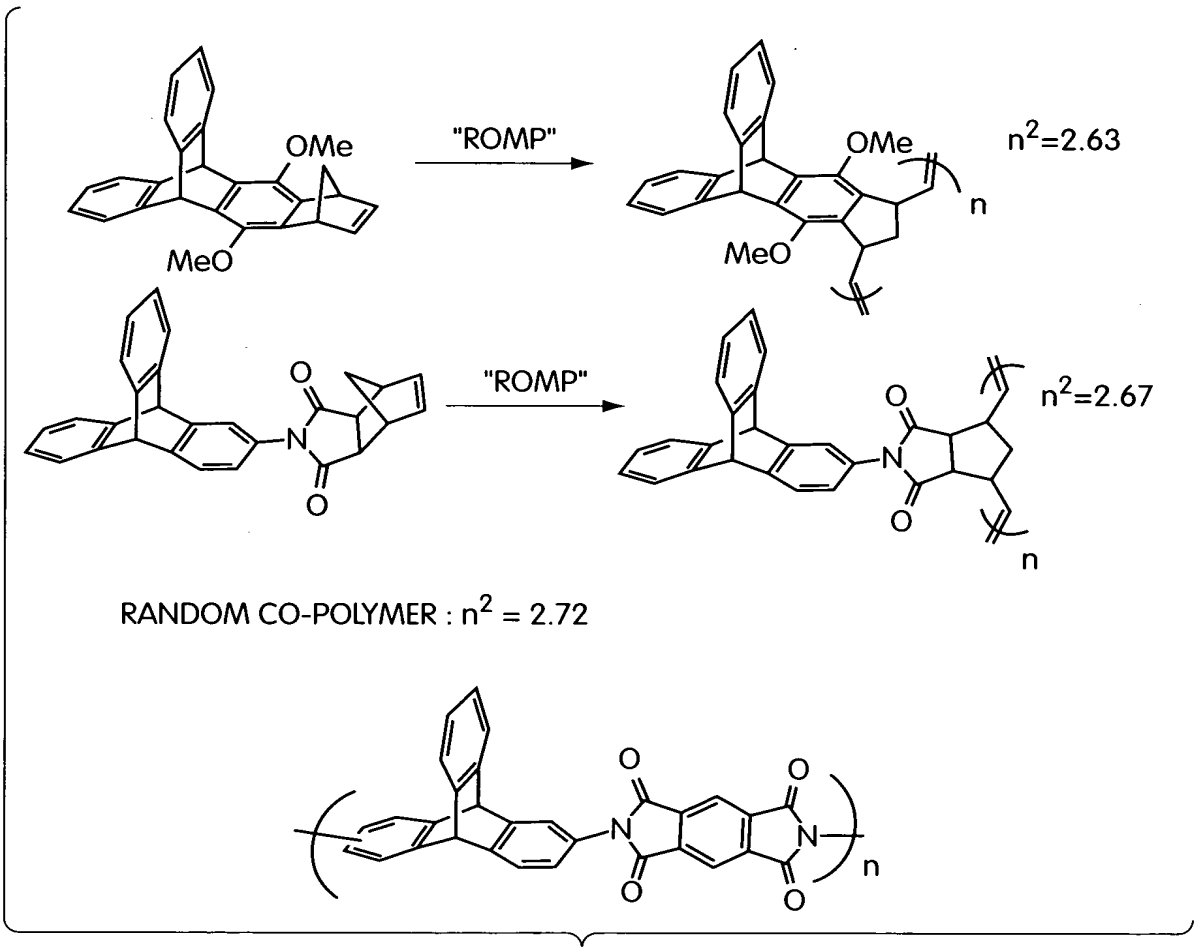

OMe
MeO
"ROMP"
OMe
MeO
n
n^2=2.63
O
N
O
"ROMP"
O
N
O
n
n^2=2.67
RANDOM CO-POLYMER : n^2 = 2.72
O
O
N
N
O
O
n

Fig. 2E

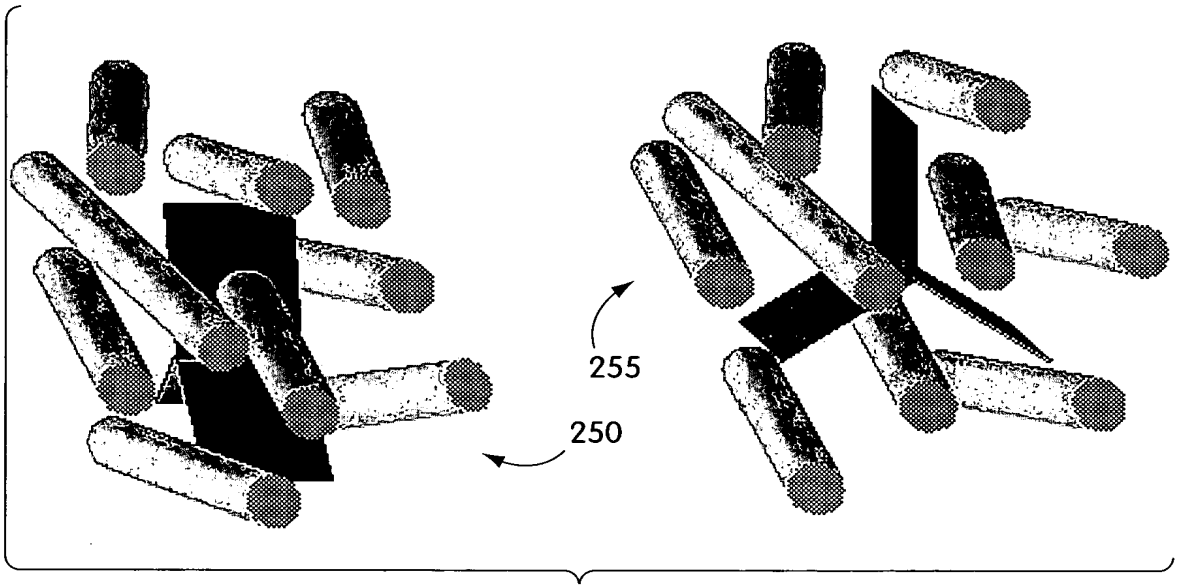


Fig. 3

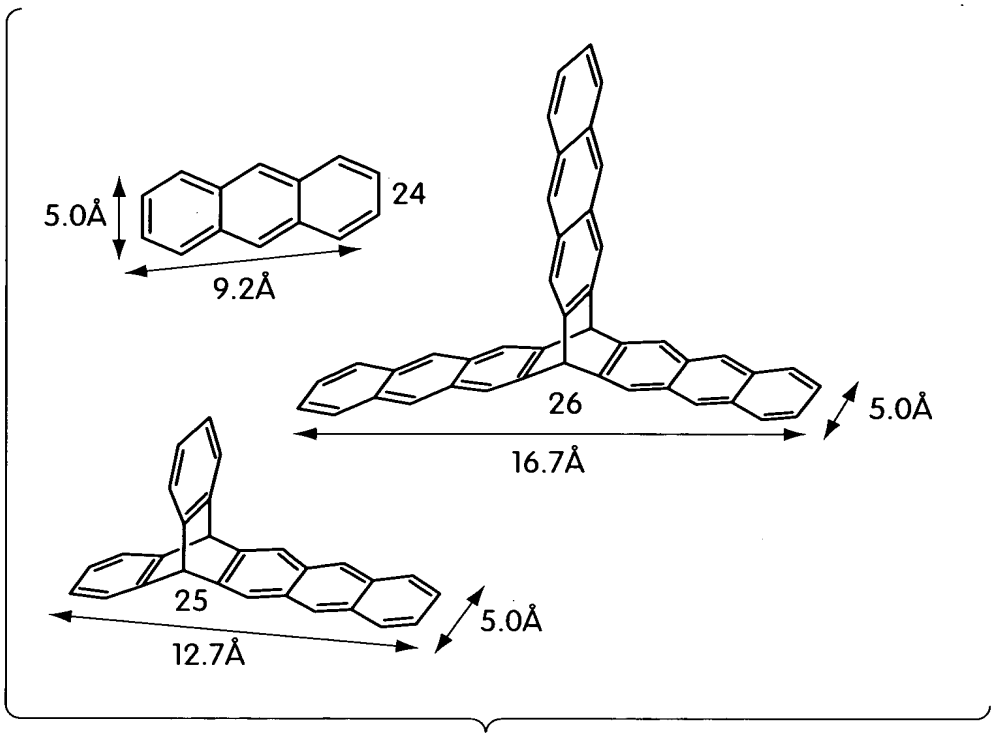


Fig. 4

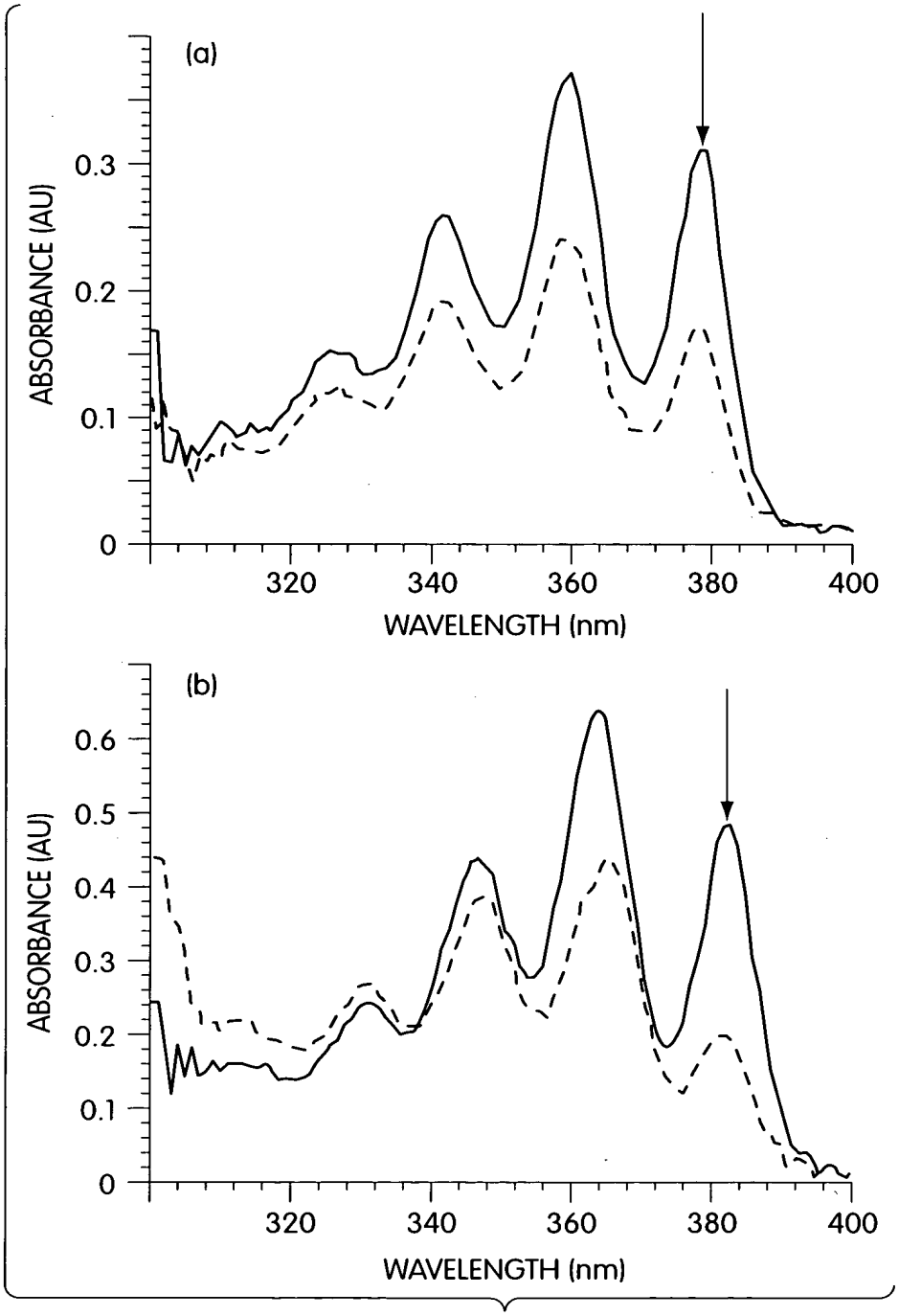

(a)
ABSORBANCE (AU)
0
0.1
0.2
0.3
320
340
360
380
400
WAVELENGTH (nm)
(b)
ABSORBANCE (AU)
0
0.1
0.2
0.3
0.4
0.5
0.6
320
340
360
380
400
WAVELENGTH (nm)

Fig. 5

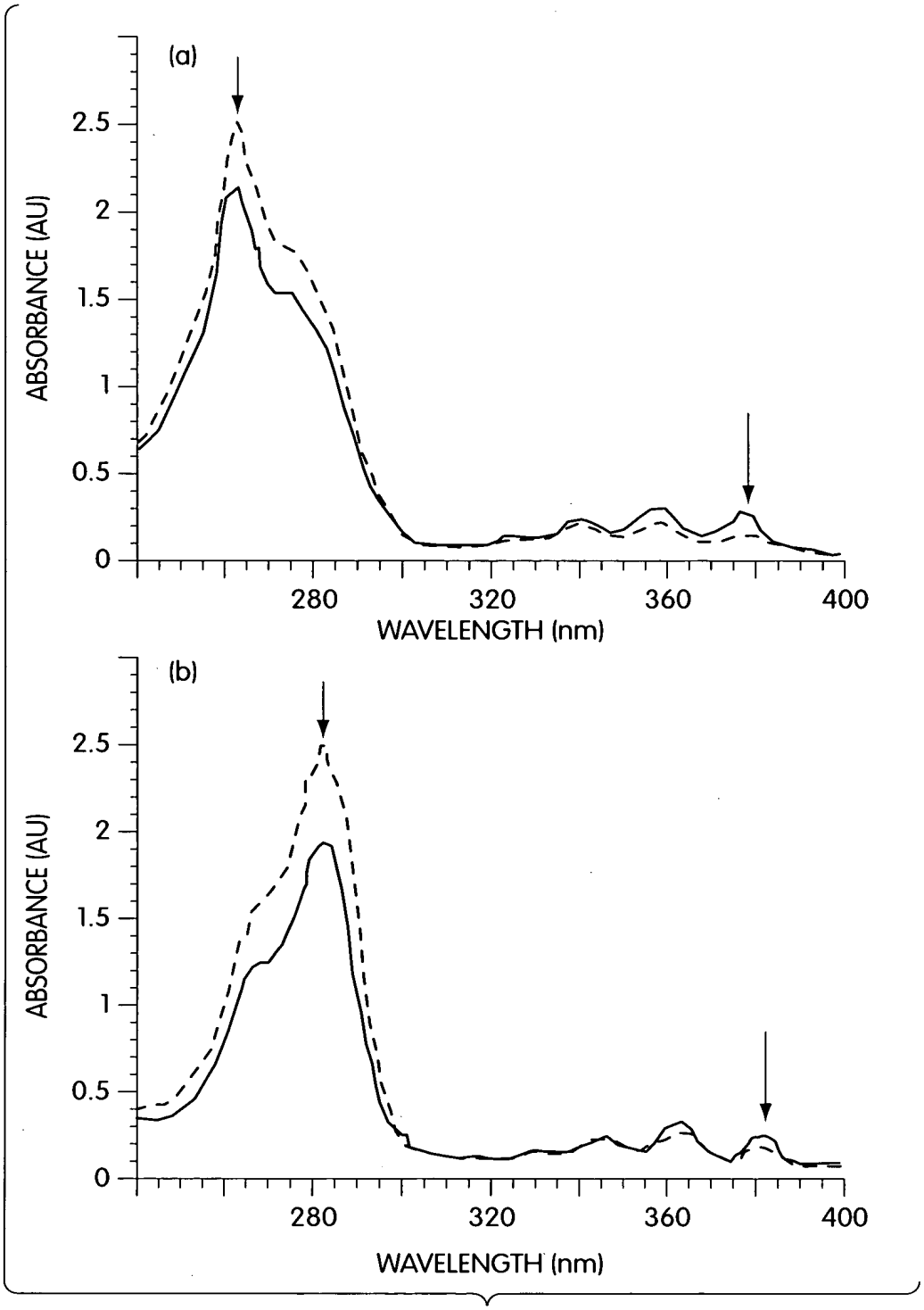

(a)
ABSORBANCE (AU)
2.5
2
1.5
1
0.5
0
280
320
360
400
WAVELENGTH (nm)
(b)
ABSORBANCE (AU)
2.5
2
1.5
1
0.5
0
280
320
360
400
WAVELENGTH (nm)

Fig. 6

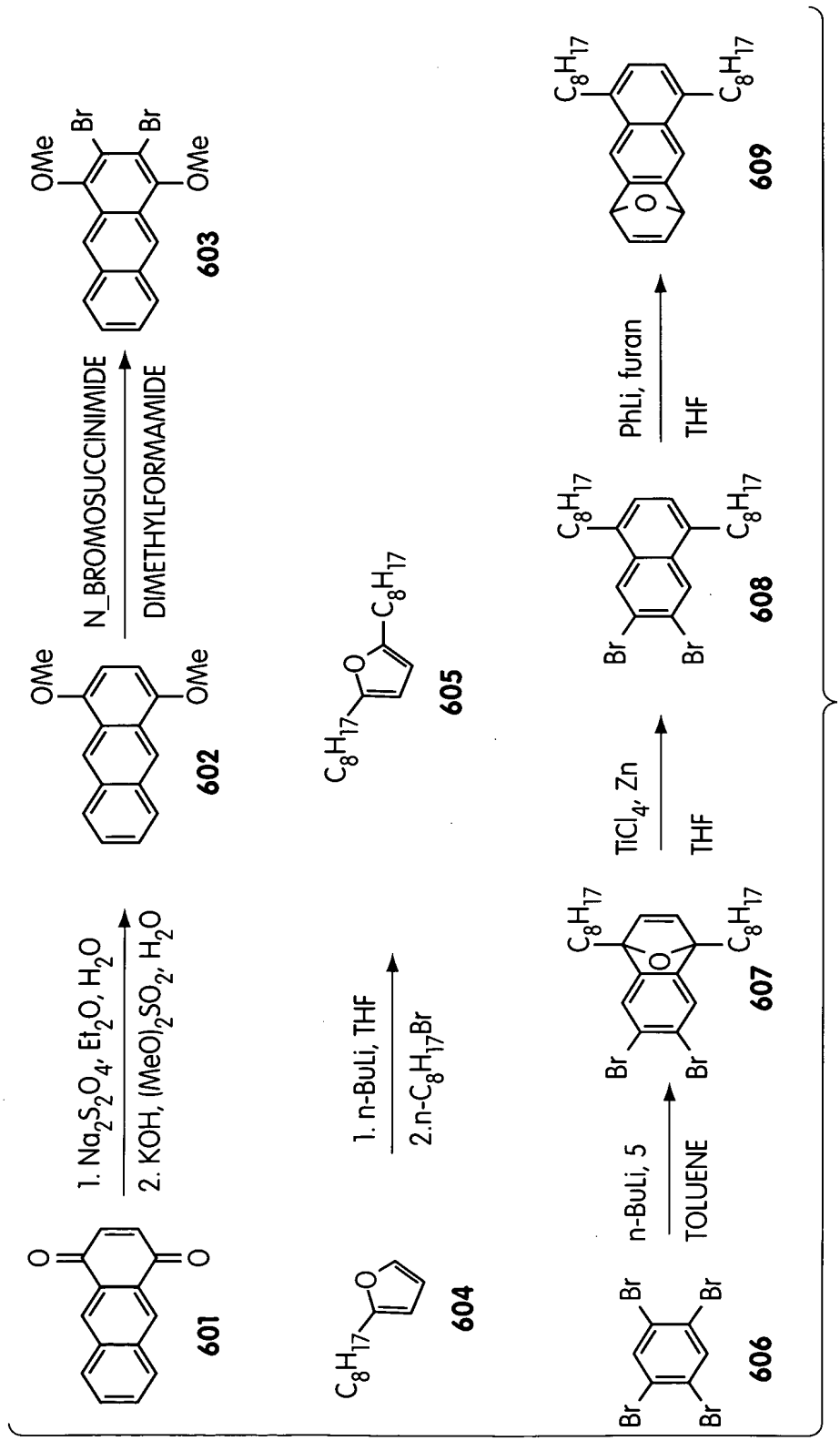

601
1. $Na_2S_2O_4$, Et_2O, H_2O
2. KOH, $(MeO)_2SO_2$, H_2O
602
OMe
OMe
N_BROMOSUCCINIMIDE
DIMETHYLFORMAMIDE
603
Br
Br
604
C_8H_{17}
1. n-BuLi, THF
2.n-$C_8H_{17}Br$
605
606
n-BuLi, 5
TOLUENE
607
$TiCl_4$, Zn
THF
608
PhLi, furan
THF
609

Fig. 6A

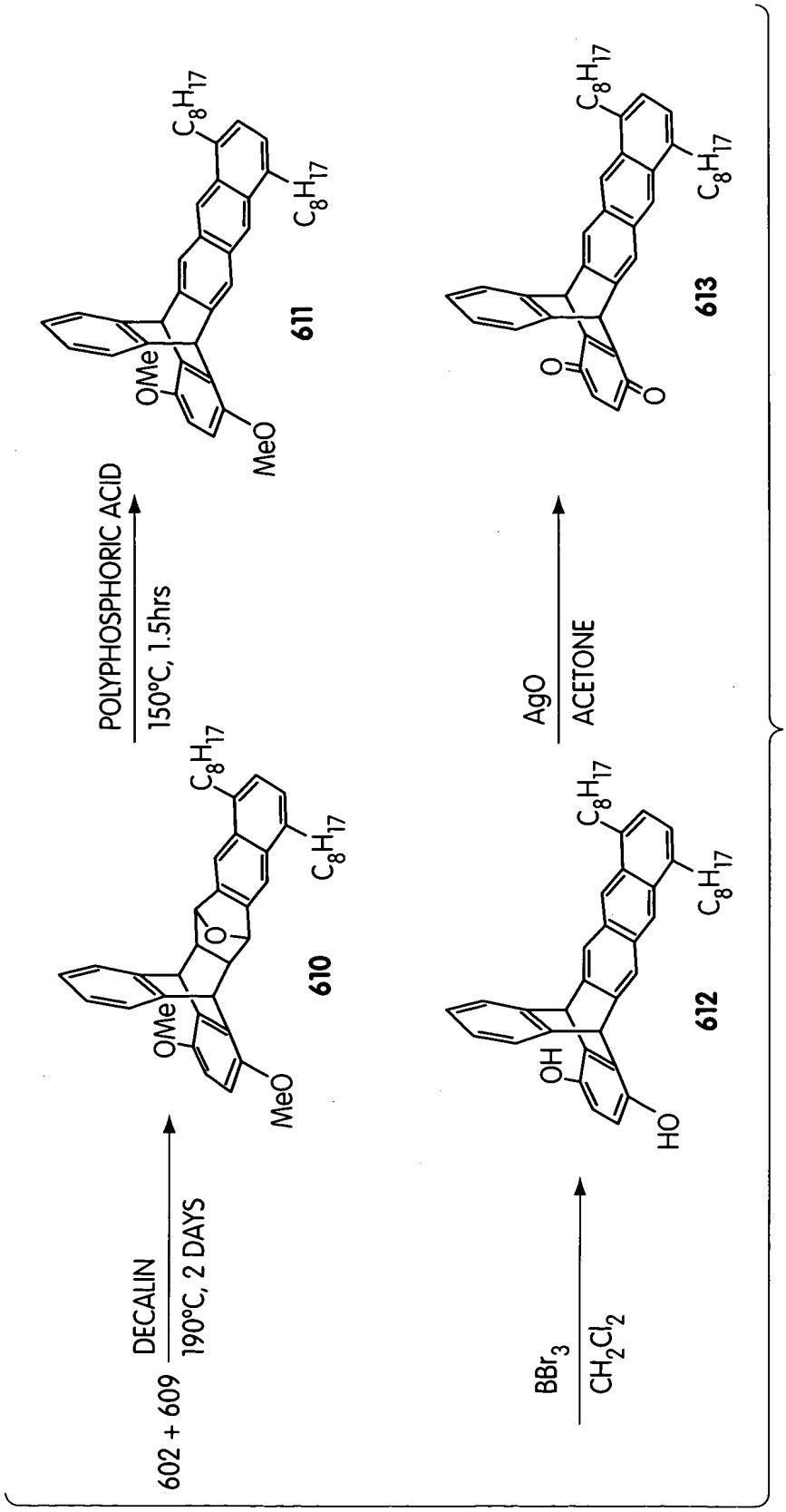

602 + 609
DECALIN
190°C, 2 DAYS
610
POLYPHOSPHORIC ACID
150°C, 1.5hrs
611
AgO
ACETONE
612
BBr3
CH2Cl2
613
C8H17
OMe
MeO
OH
HO
O

Fig. 6B

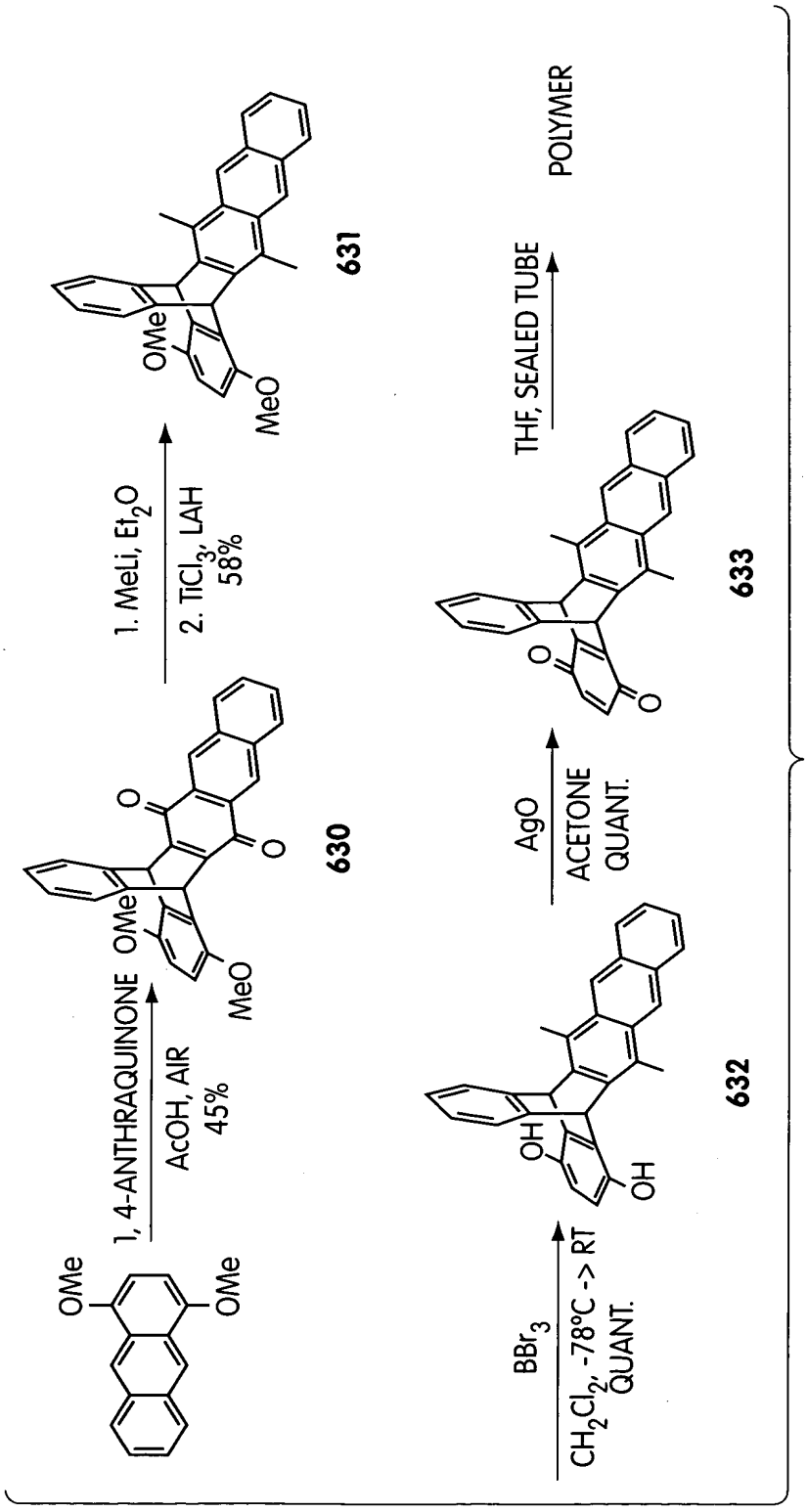

OMe
OMe
1, 4-ANTHRAQUINONE
AcOH, AIR
45%
OMe
MeO
O
O
630
1. MeLi, Et2O
2. TiCl3, LAH
58%
OMe
MeO
631
BBr3
CH2Cl2, -78°C -> RT
QUANT.
OH
OH
632
AgO
ACETONE
QUANT.
O
O
633
THF, SEALED TUBE
POLYMER

Fig. 6C

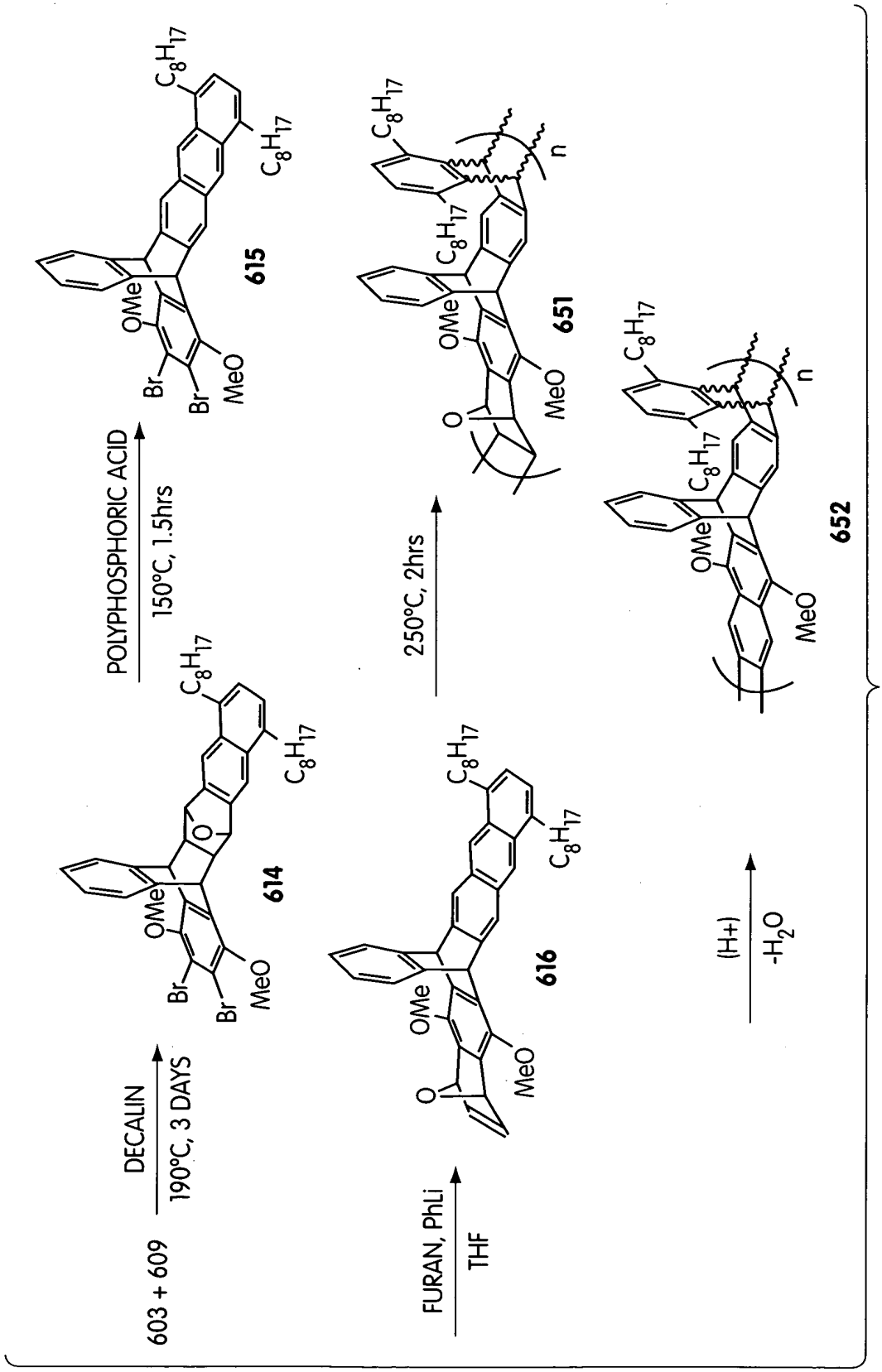

603 + 609
DECALIN
190°C, 3 DAYS
614
FURAN, PhLi
THF
616
POLYPHOSPHORIC ACID
150°C, 1.5hrs
615
250°C, 2hrs
651
(H+)
-H2O
652
OMe
MeO
Br
C8H17
n
O

Fig. 6D

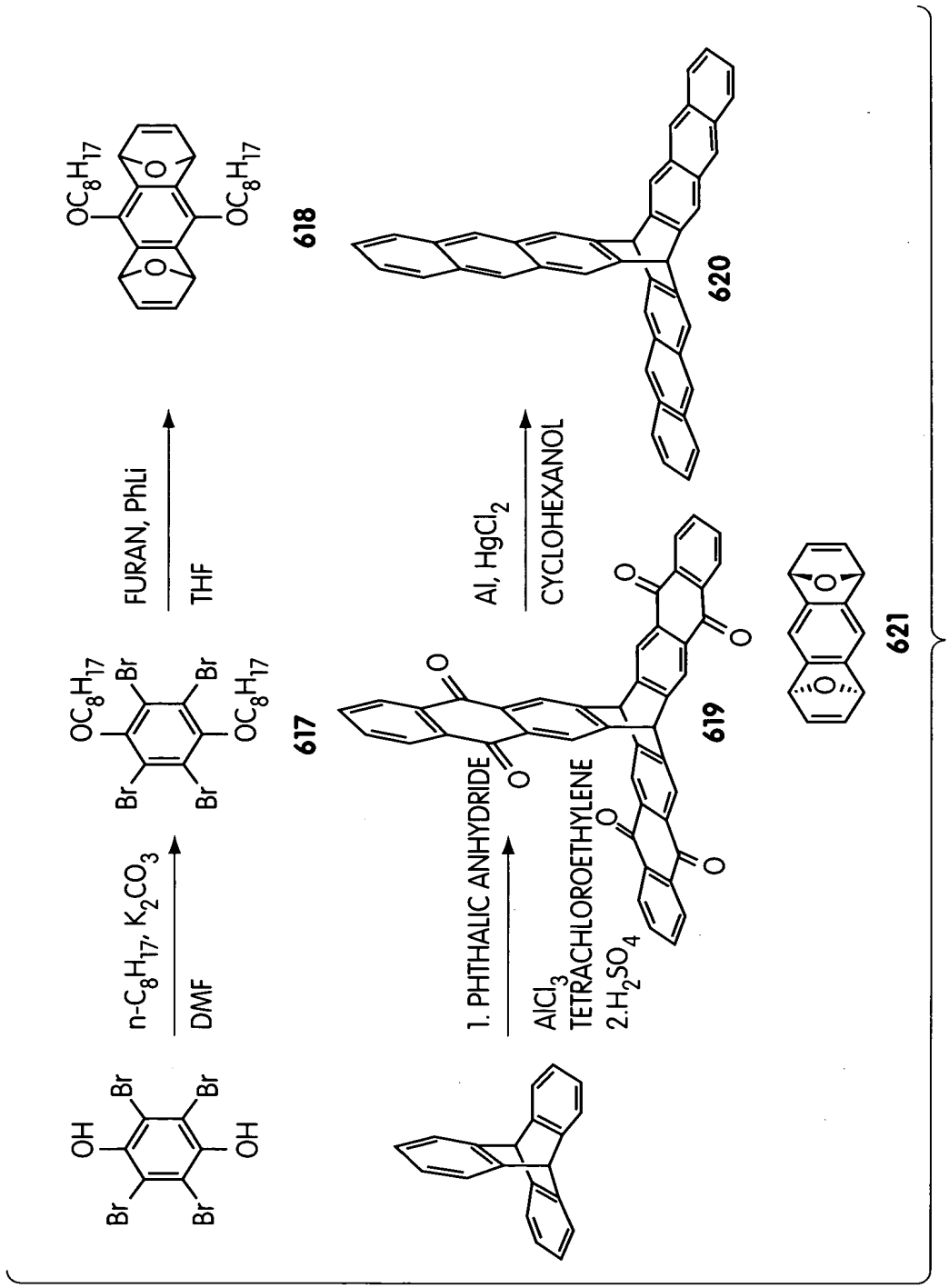

n-C8H17, K2CO3
DMF
FURAN, PhLi
THF
1. PHTHALIC ANHYDRIDE
AlCl3
TETRACHLOROETHYLENE
2.H2SO4
Al, HgCl2
CYCLOHEXANOL
617
618
619
620
621

Fig. 6E

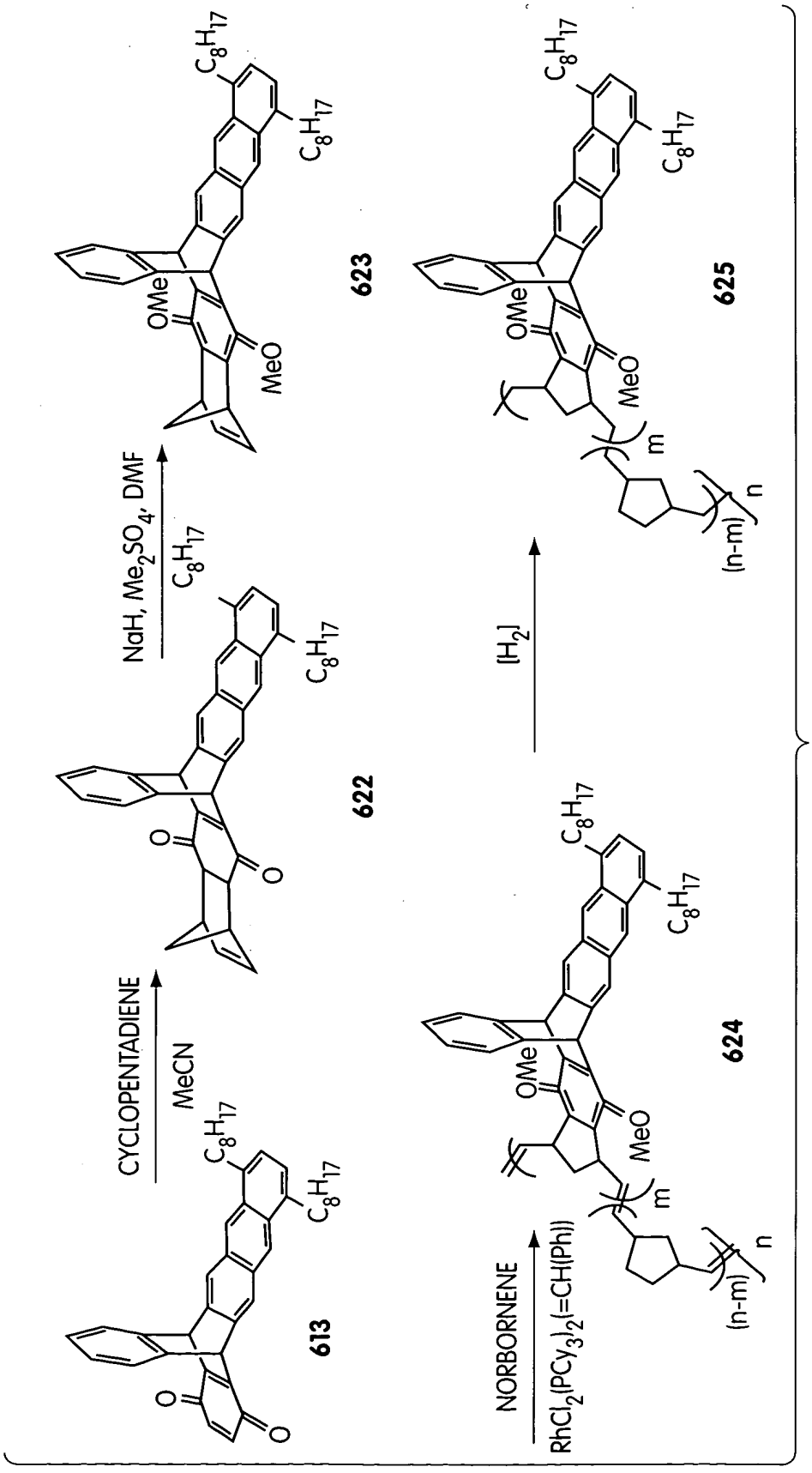

CYCLOPENTADIENE
MeCN
NaH, Me_2SO_4, DMF
$[H_2]$
NORBORNENE
$RhCl_2(PCy_3)_2(=CH(Ph))$
C_8H_{17}
OMe
MeO
m
n
(n-m)
613
622
623
624
625

Fig. 6F

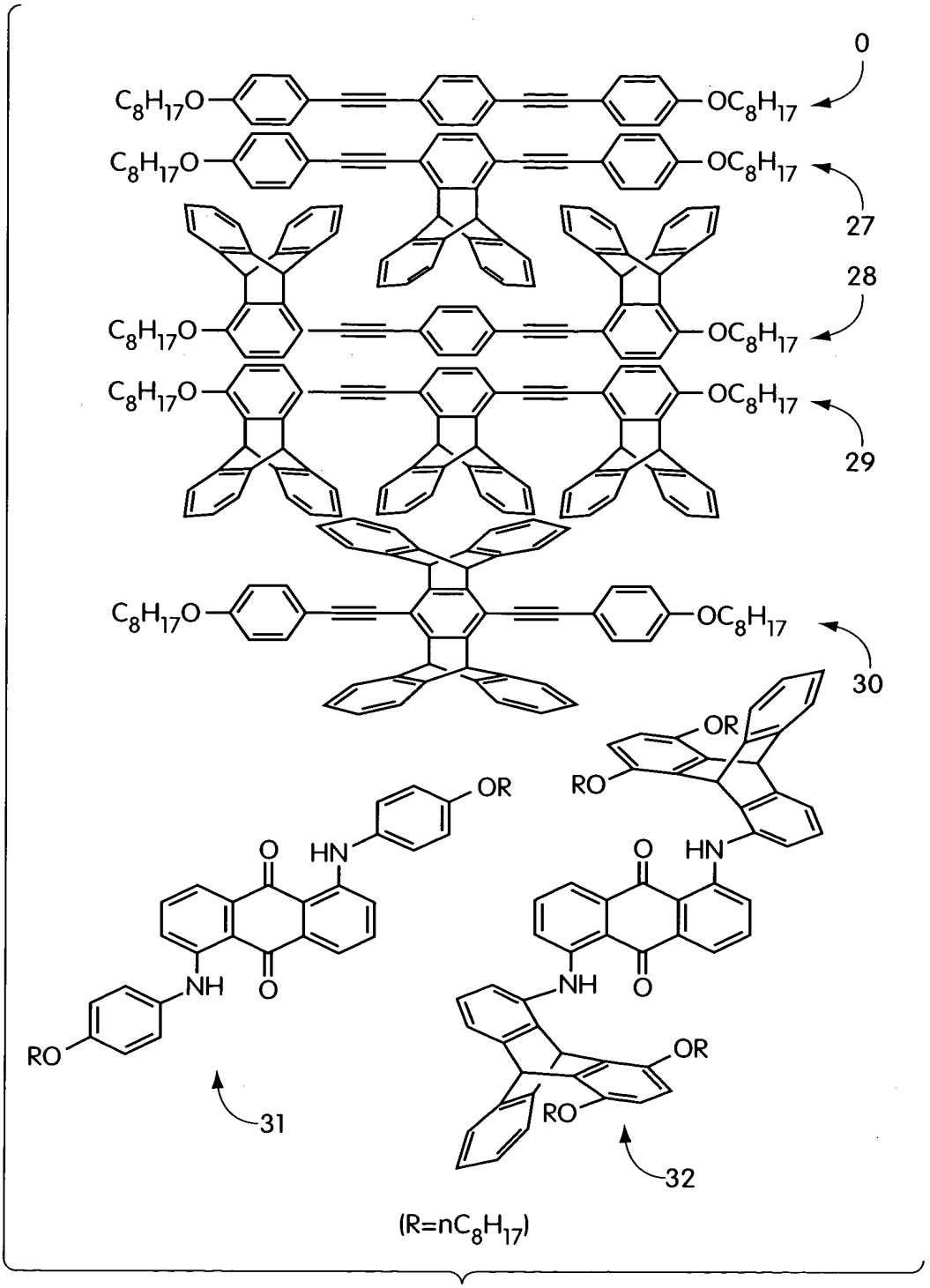


Fig. 7

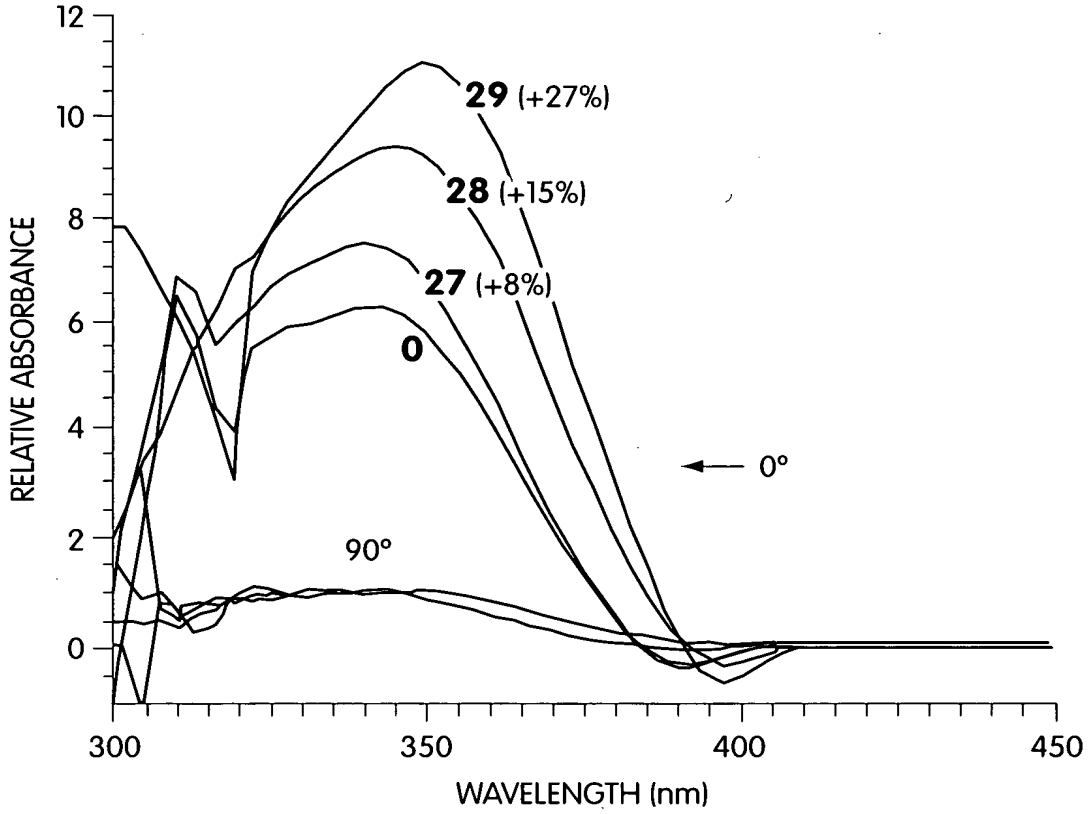

RELATIVE ABSORBANCE
WAVELENGTH (nm)
29 (+27%)
28 (+15%)
27 (+8%)
0
0°
90°
12
10
8
6
4
2
0
300
350
400
450

Fig. 8

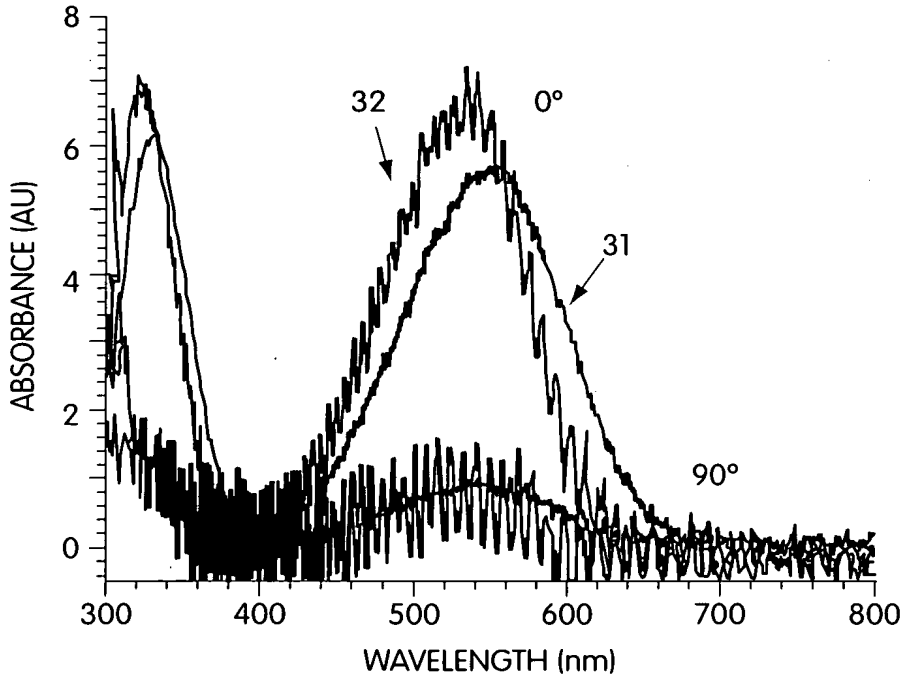

ABSORBANCE (AU)
WAVELENGTH (nm)
32
0°
31
90°
8
6
4
2
0
300
400
500
600
700
800

Fig. 9

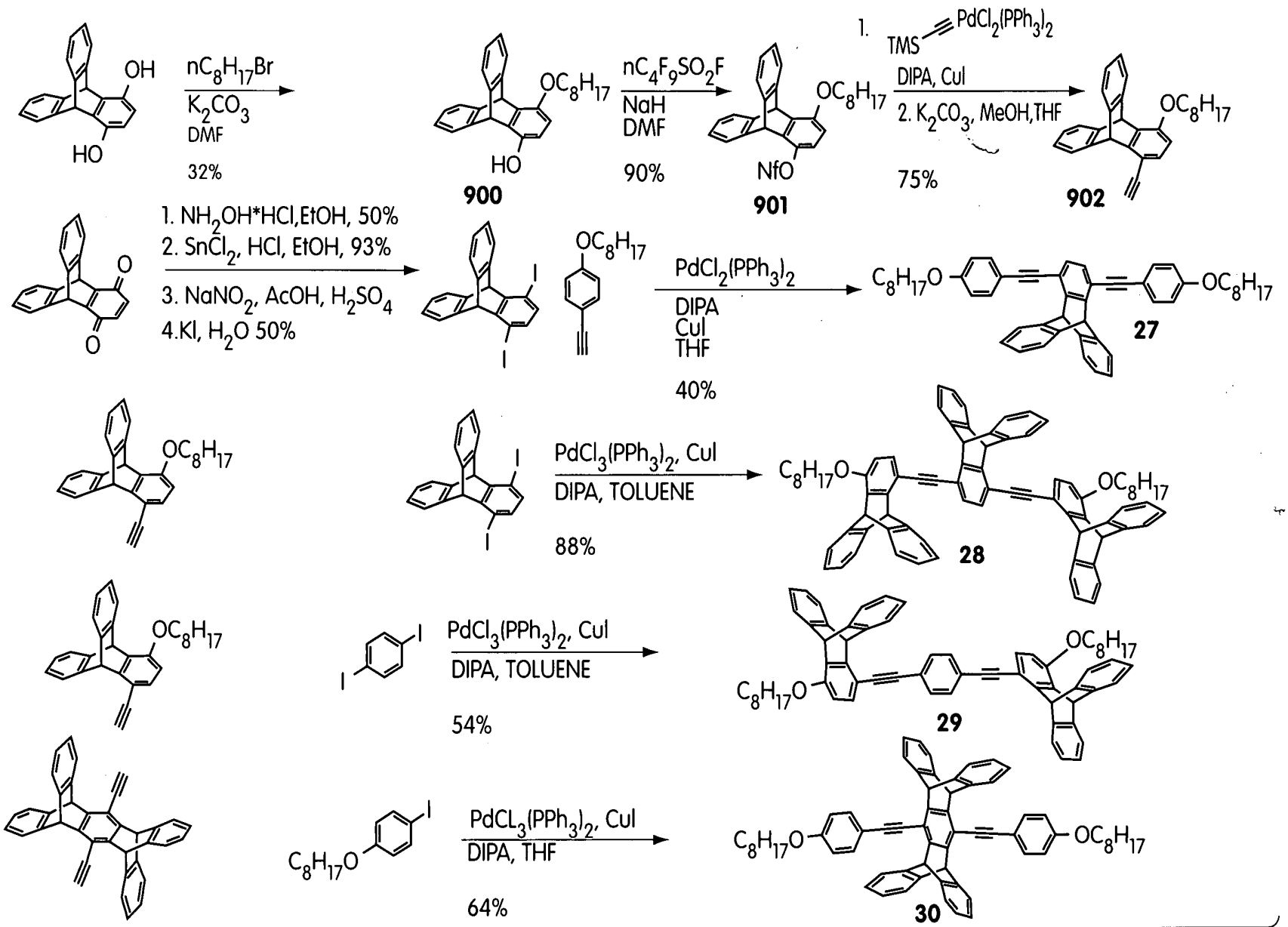

nC8H17Br
K2CO3
DMF
32%
900
nC4F9SO2F
NaH
DMF
90%
901
1. TMS
PdCl2(PPh3)2
DIPA, CuI
2. K2CO3, MeOH,THF
75%
902
1. NH2OH*HCl,EtOH, 50%
2. SnCl2, HCl, EtOH, 93%
3. NaNO2, AcOH, H2SO4
4.KI, H2O 50%
PdCl2(PPh3)2
DIPA
CuI
THF
40%
27
PdCl3(PPh3)2, CuI
DIPA, TOLUENE
88%
28
PdCl3(PPh3)2, CuI
DIPA, TOLUENE
54%
29
PdCL3(PPh3)2, CuI
DIPA, THF
64%
30

Fig. 9A

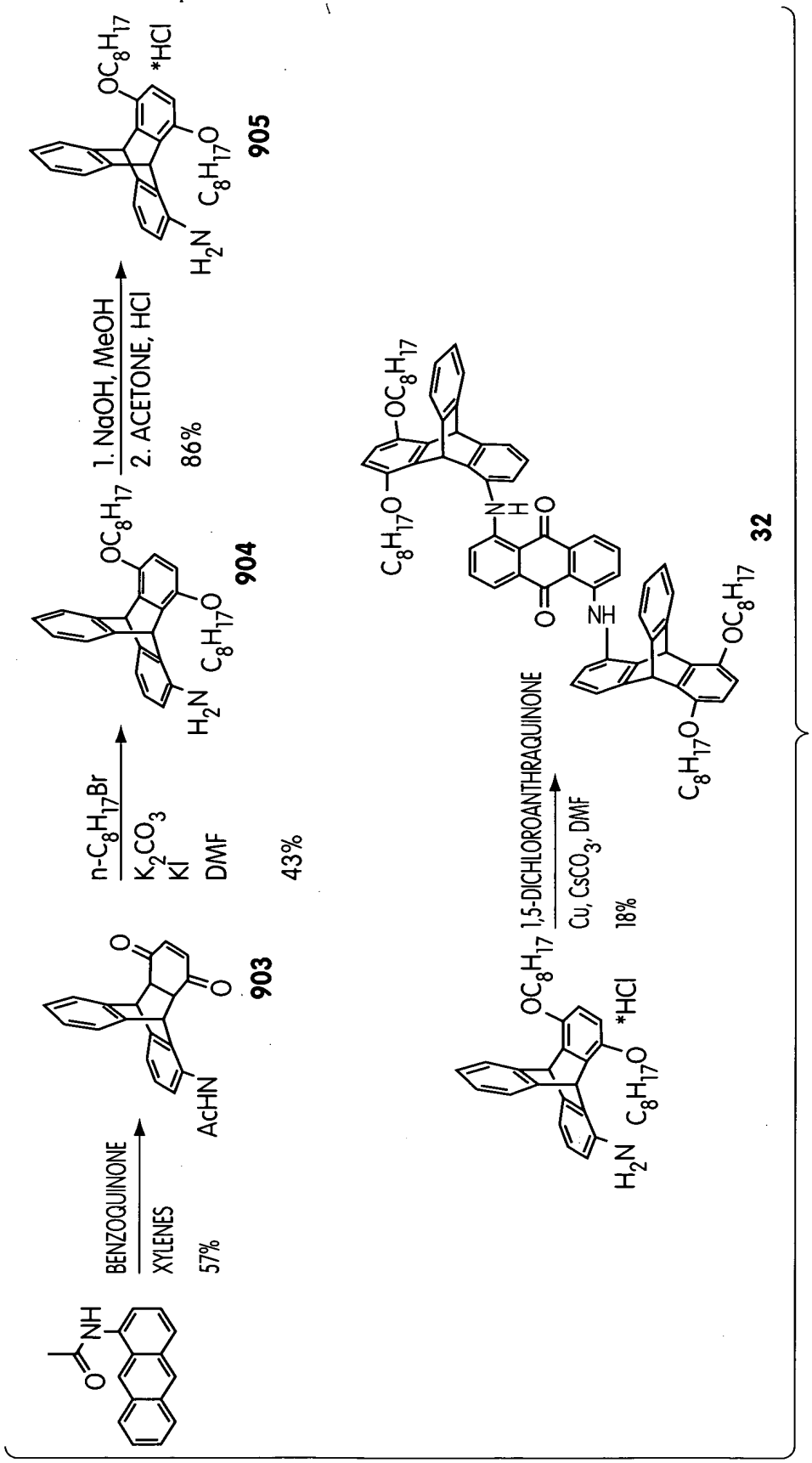

BENZOQUINONE
XYLENES
57%
903
n-C8H17Br
K2CO3
KI
DMF
43%
904
1. NaOH, MeOH
2. ACETONE, HCl
86%
905
1,5-DICHLOROANTHRAQUINONE
Cu, CsCO3, DMF
18%
32

Fig. 9B

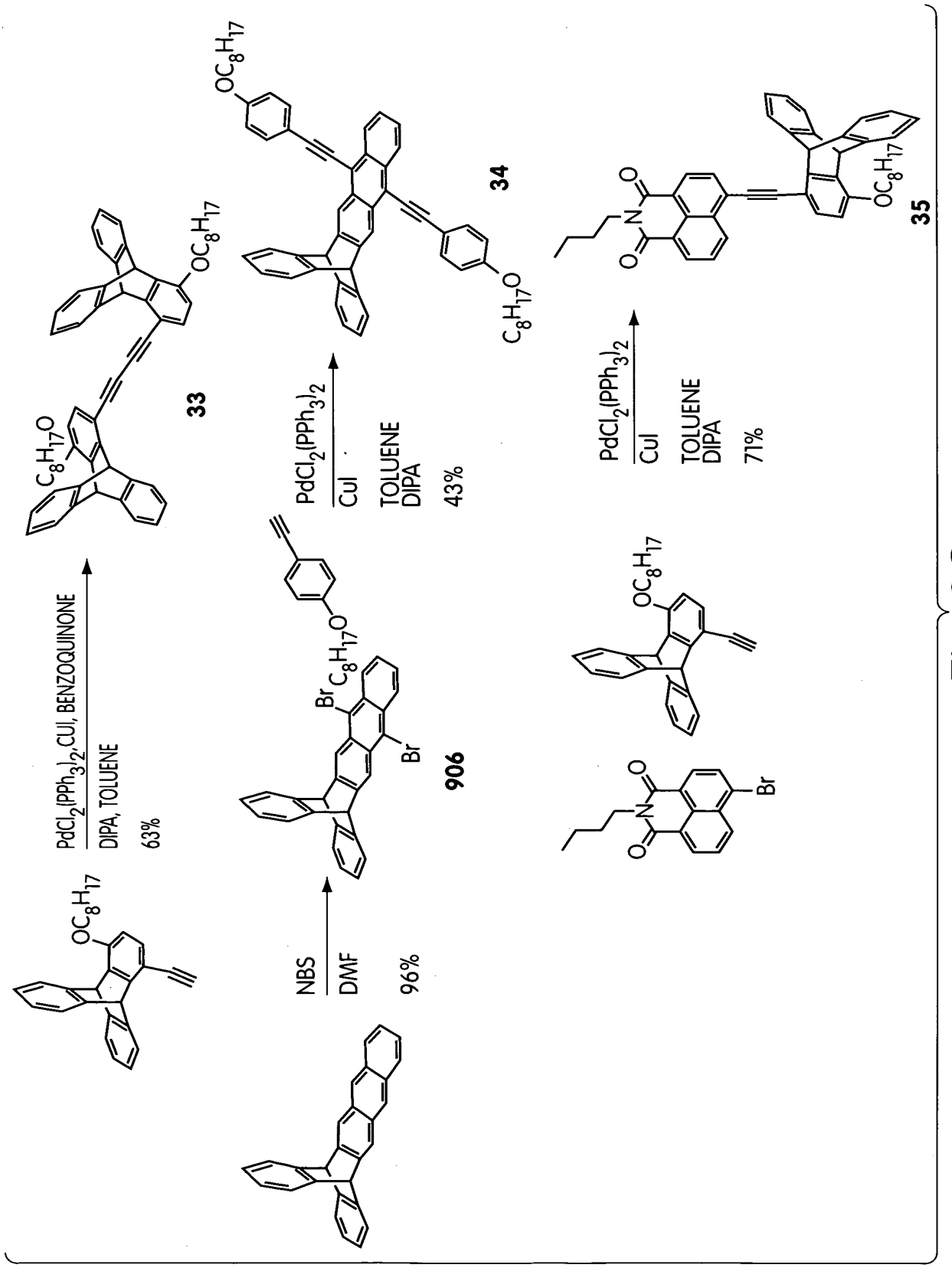

PdCl2(PPh3)2,CUI, BENZOQUINONE
DIPA, TOLUENE
63%
33
NBS
DMF
96%
906
PdCl2(PPh3)2
CuI
TOLUENE
DIPA
43%
34
PdCl2(PPh3)2
CuI
TOLUENE
DIPA
71%
35

Fig. 9C

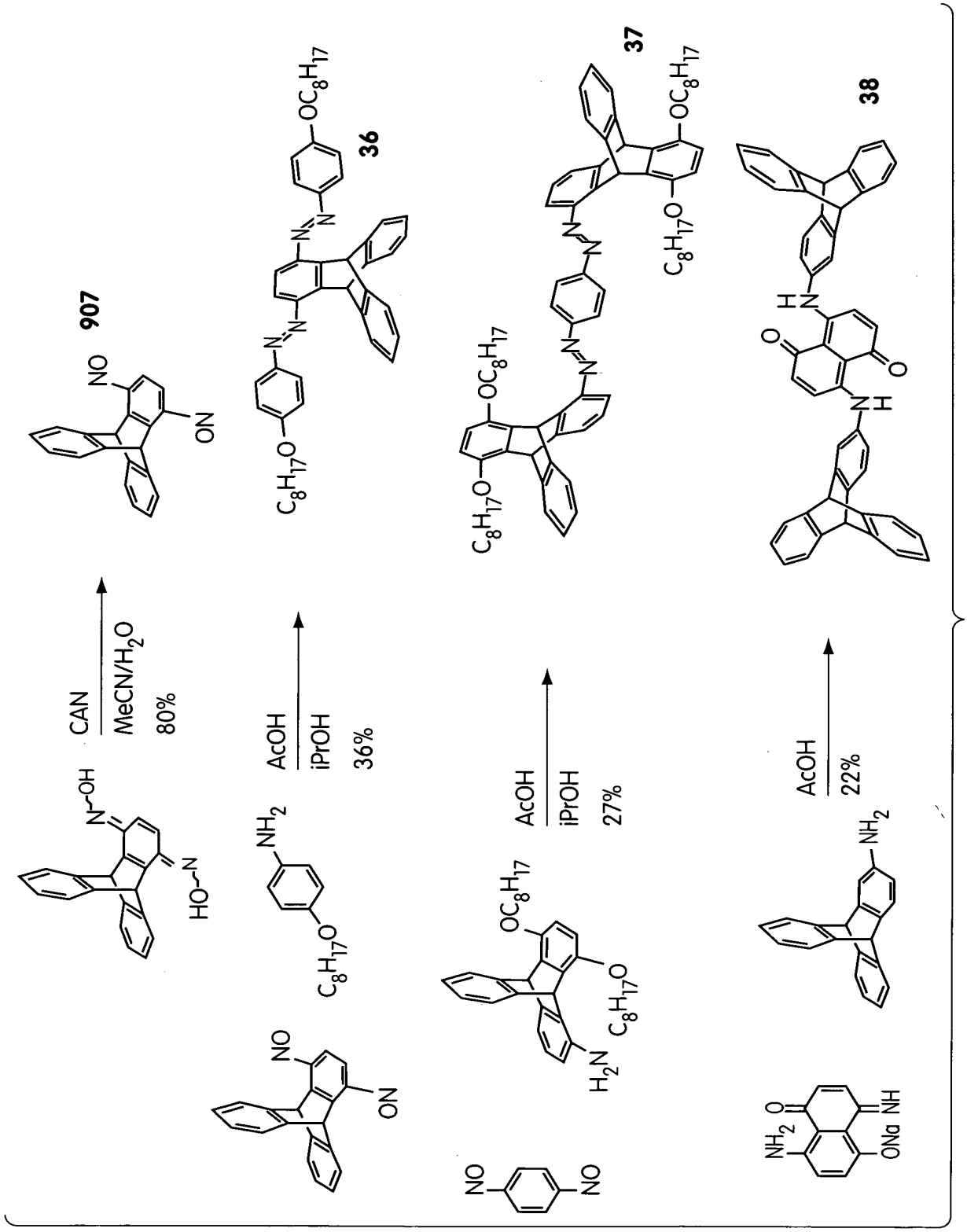


Fig. 9D

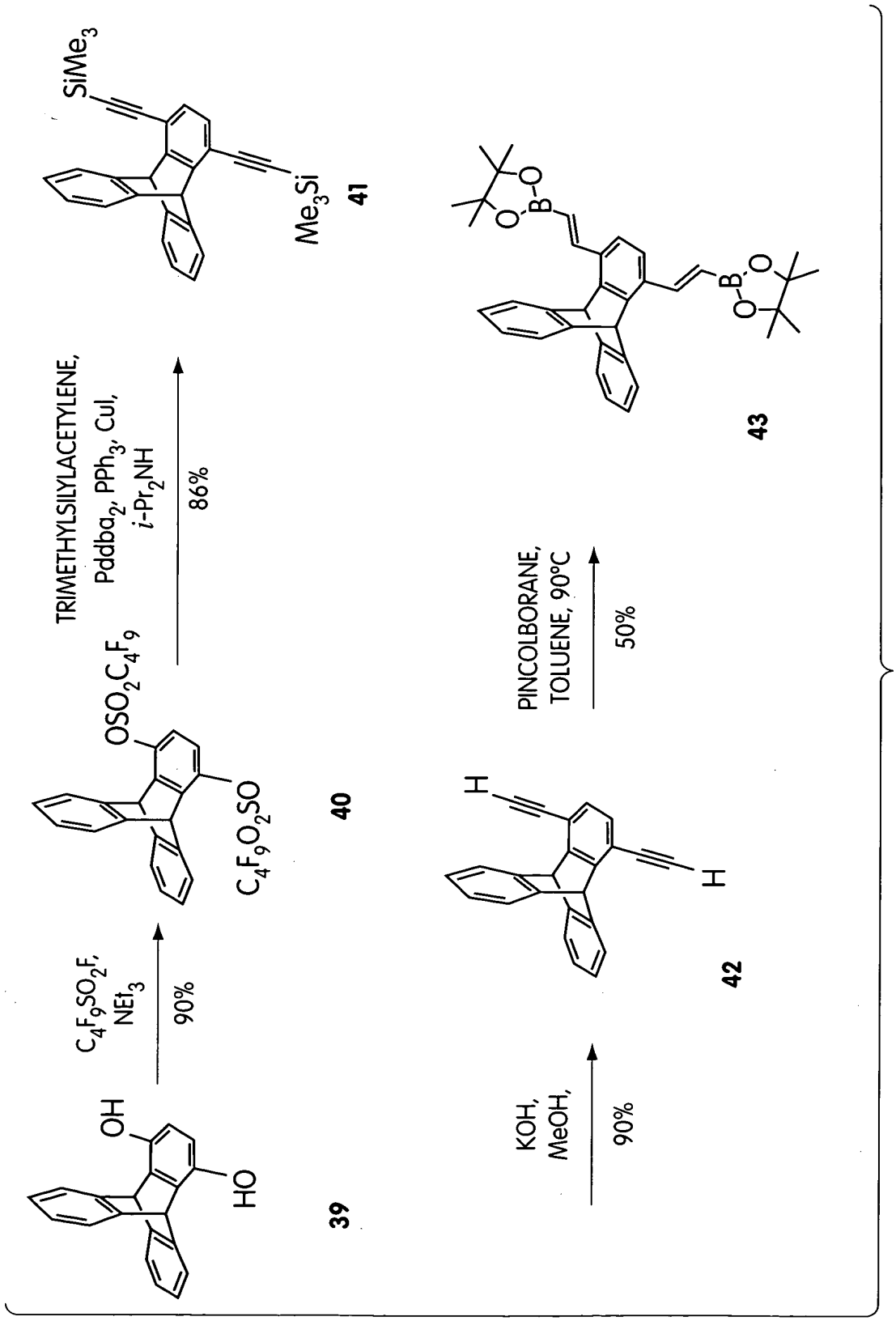

OH
HO
39
$C_4F_9SO_2F$, NEt_3
90%
$OSO_2C_4F_9$
$C_4F_9O_2SO$
40
TRIMETHYLSILYLACETYLENE, $Pddba_2$, PPh_3, CuI, i-Pr_2NH
86%
$SiMe_3$
Me_3Si
41
KOH, MeOH,
90%
H
H
42
PINCOLBORANE, TOLUENE, 90°C
50%
B-O
O
O
43

Fig. 9E

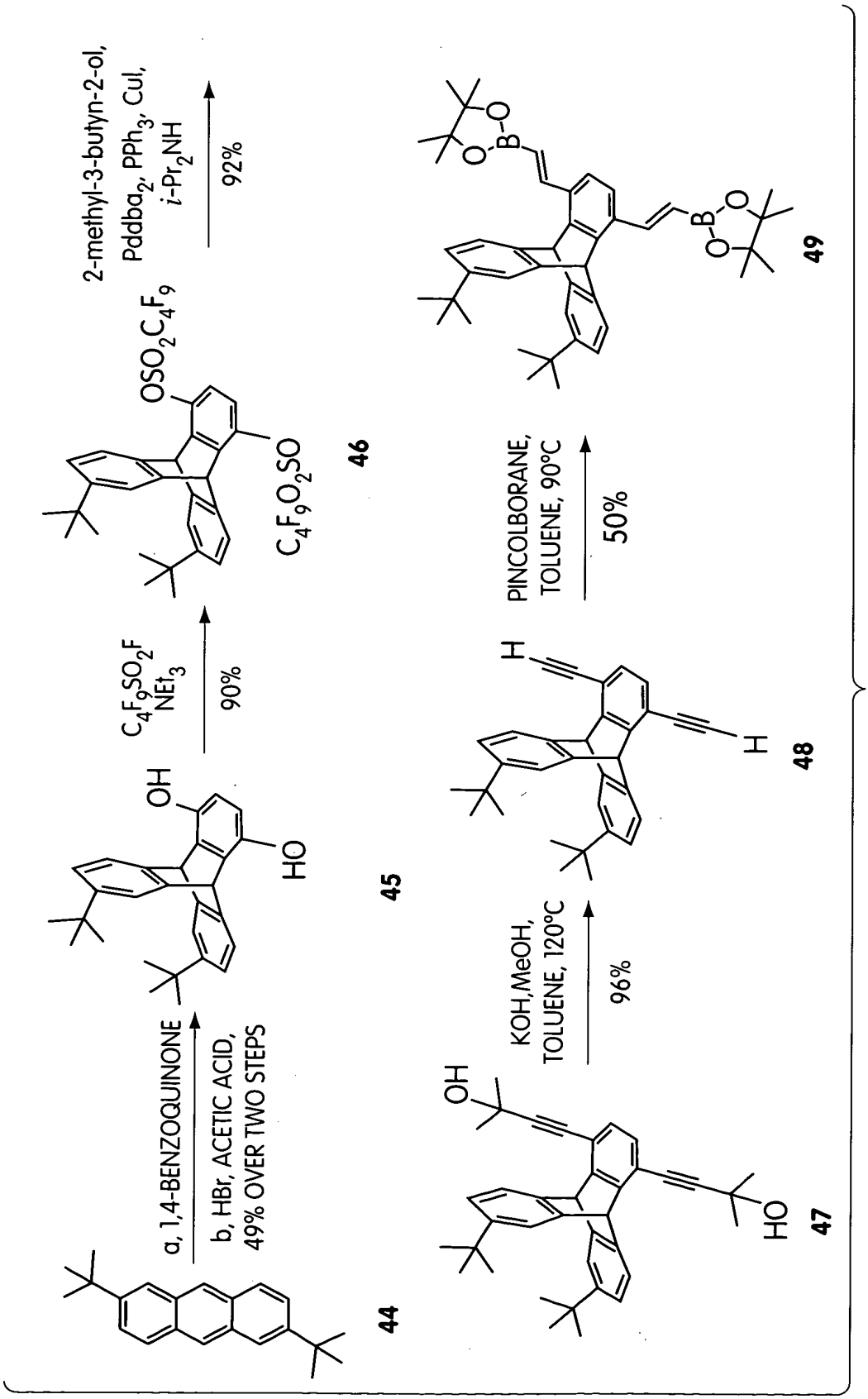
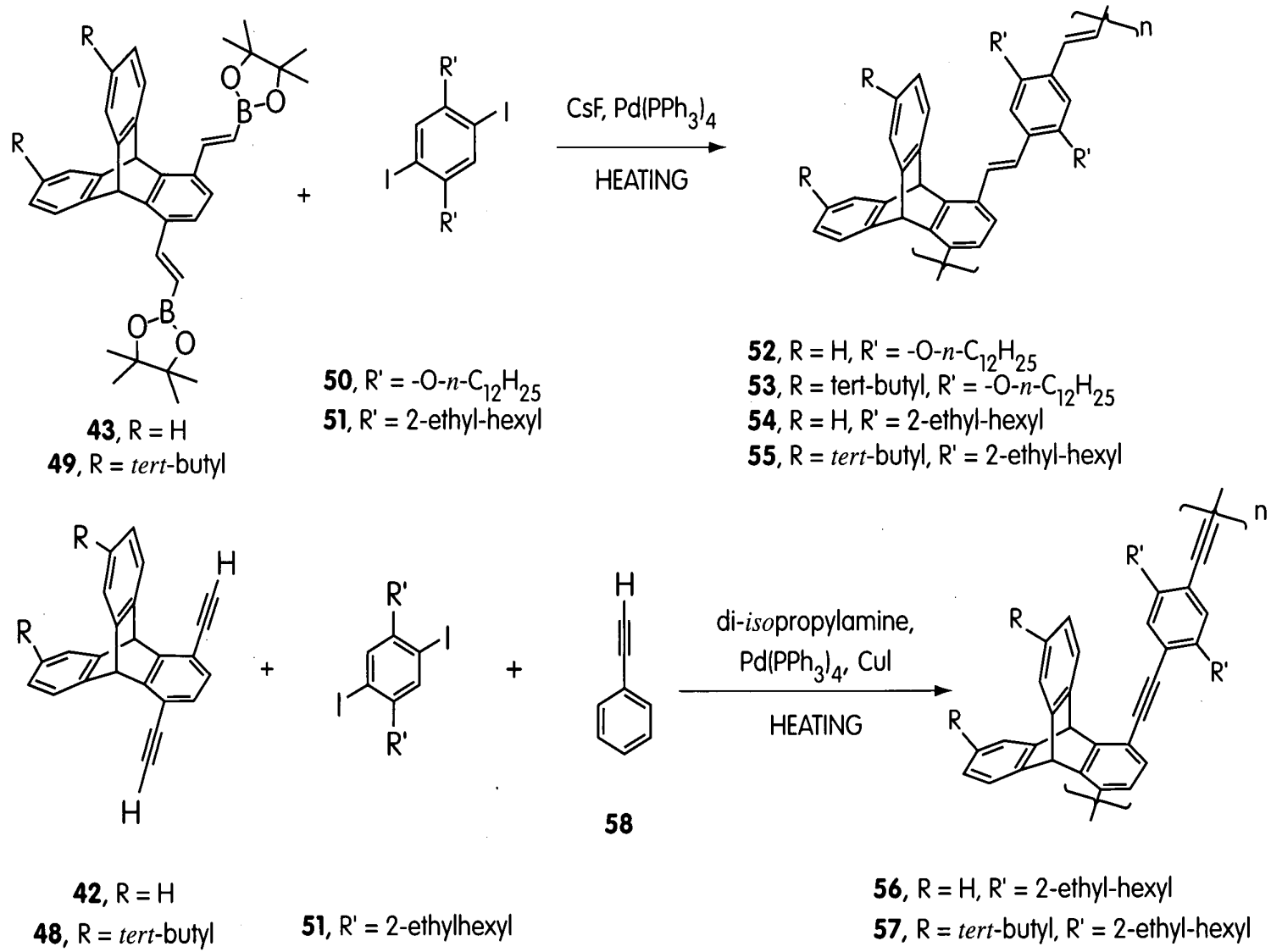

a, 1,4-BENZOQUINONE
b, HBr, ACETIC ACID,
49% OVER TWO STEPS
OH
HO
44
45
$C_4F_9SO_2F$
NEt_3
90%
$OSO_2C_4F_9$
$C_4F_9O_2SO$
46
2-methyl-3-butyn-2-ol,
$Pddba_2$, PPh_3, CuI,
i-Pr_2NH
92%
KOH,MeOH,
TOLUENE, 120°C
96%
H
H
48
47
OH
HO
PINCOLBORANE,
TOLUENE, 90°C
50%
B
O
O
49

Fig. 9F



43, R = H
49, R = *tert*-butyl

50, R' = -O-*n*-$C_{12}H_{25}$
51, R' = 2-ethyl-hexyl

52, R = H, R' = -O-*n*-$C_{12}H_{25}$
53, R = tert-butyl, R' = -O-*n*-$C_{12}H_{25}$
54, R = H, R' = 2-ethyl-hexyl
55, R = *tert*-butyl, R' = 2-ethyl-hexyl

42, R = H
48, R = *tert*-butyl

51, R' = 2-ethylhexyl

58

56, R = H, R' = 2-ethyl-hexyl
57, R = *tert*-butyl, R' = 2-ethyl-hexyl

Fig. 9G

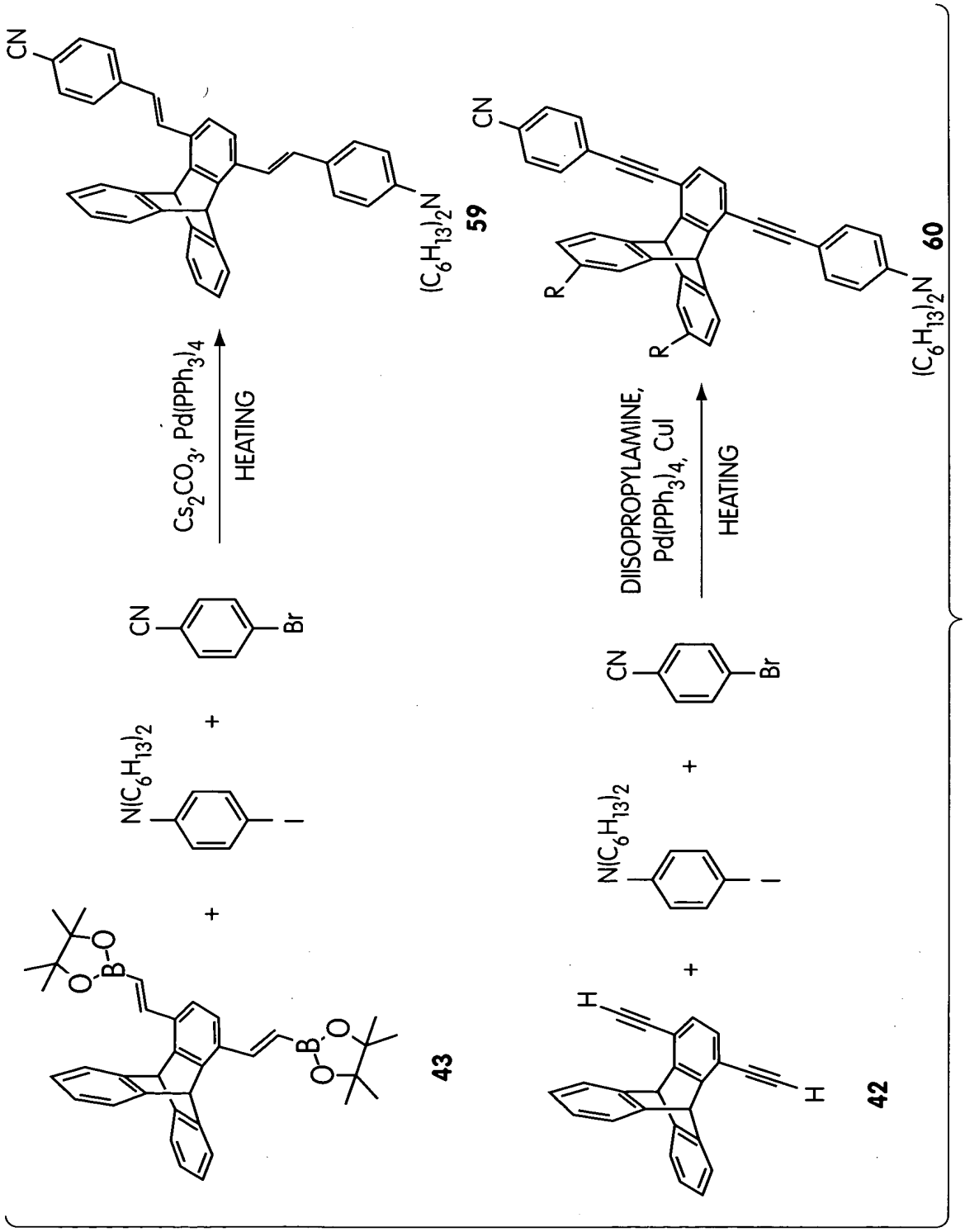

CN
$(C_6H_{13})_2N$
59
Cs_2CO_3, $Pd(PPh_3)_4$
HEATING
CN
Br
$N(C_6H_{13})_2$
43
DIISOPROPYLAMINE,
$Pd(PPh_3)_4$, CuI
HEATING
R
R
60
H
H
42

Fig. 9H

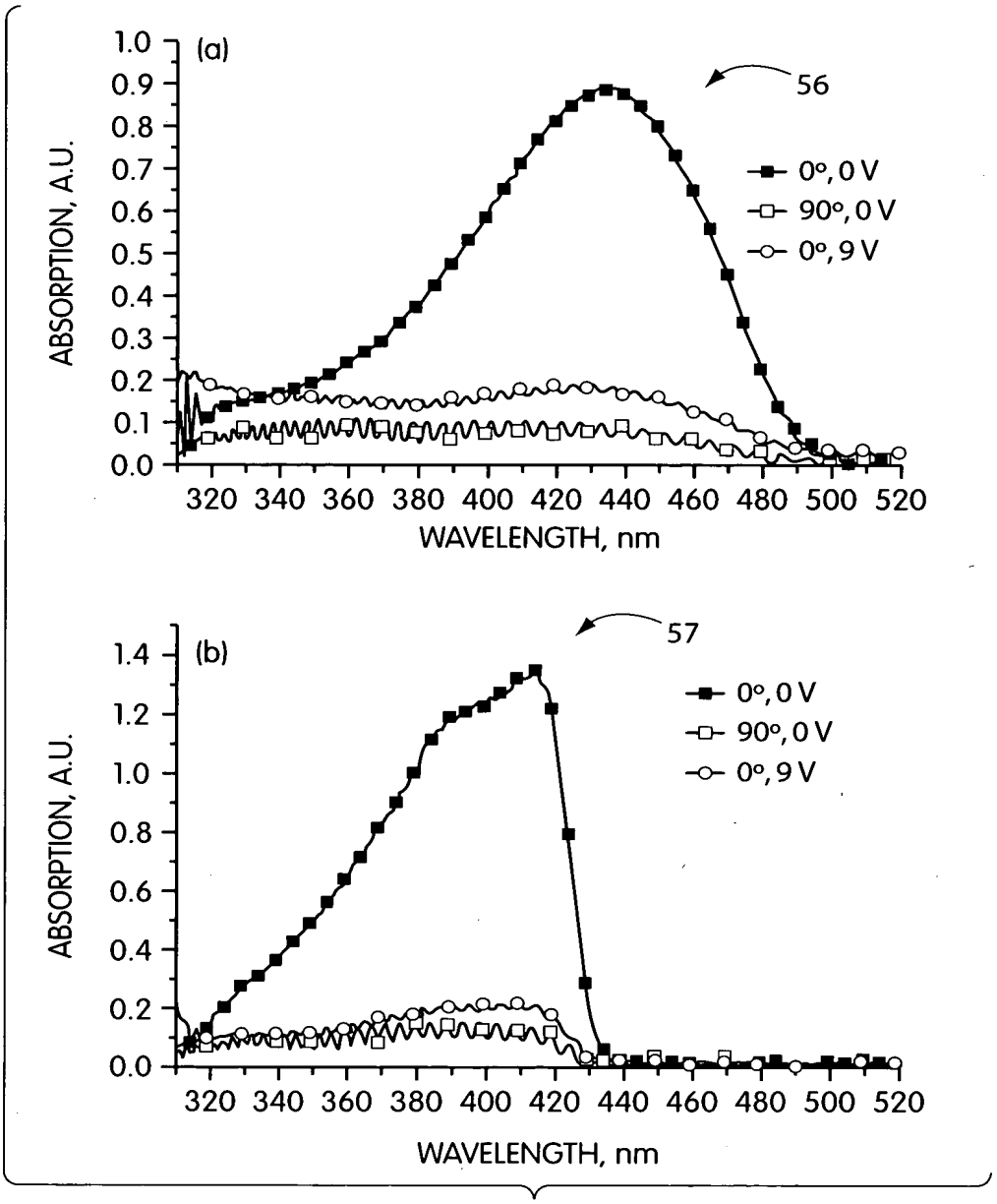

(a)
56
ABSORPTION, A.U.
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0°, 0 V
90°, 0 V
0°, 9 V
320 340 360 380 400 420 440 460 480 500 520
WAVELENGTH, nm
(b)
57
ABSORPTION, A.U.
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0°, 0 V
90°, 0 V
0°, 9 V
320 340 360 380 400 420 440 460 480 500 520
WAVELENGTH, nm

Fig. 10

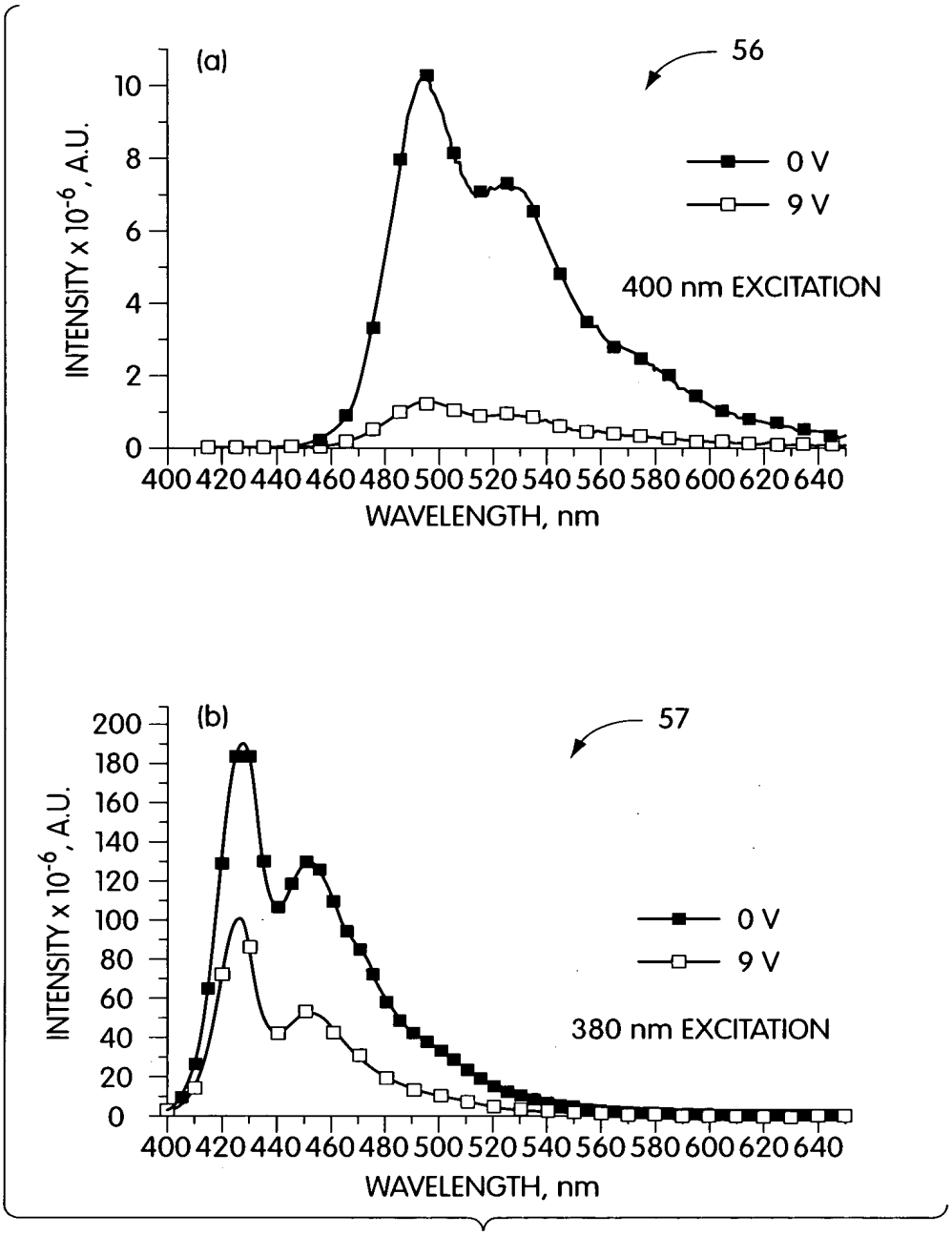

(a)
56
INTENSITY x 10^{-6}, A.U.
0 V
9 V
400 nm EXCITATION
WAVELENGTH, nm
(b)
57
INTENSITY x 10^{-6}, A.U.
0 V
9 V
380 nm EXCITATION
WAVELENGTH, nm

Fig. 11